Government Employment and Pay: Some International Comparisons

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Government Employment and Pay: Some International Comparisons

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The term "country," as used in this publication, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states but for which statistical data are maintained and provided internationally on a separate and independent basis.

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The following symbols have been used throughout this paper:

... to indicate that data are not available;

— to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;

– between years or months (e.g., 1979–81 or January–June) to indicate the years or months covered, including the beginning and ending years or months;

/ between years (e.g., 1980/81) to indicate a crop or fiscal (financial) year.

"Billion" means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

Prefatory Note

This study was prepared by Alan A. Tait, Deputy Director of the Fiscal Affairs Department, and Peter S. Heller, Chief of the Special Fiscal Studies Division. Joan Aghevli, a research assistant in the Fiscal Affairs Department, coordinated the distribution of the questionnaires and tabulated the data. Tarja Papavassiliou, also a research assistant in the Fiscal Affairs Department, did much of the computer analyses.

Many people in many countries took the time and trouble to reply to the questionnaires, often producing new statistics or recalculating old statistics into new forms. In addition, the paper benefitted from the valuable criticisms of V. Tanzi, R. Goode, J. Levin, C. Gray, E. Berg, and P. Landell-Mills. Naturally, the opinions expressed are those of the authors and do not necessarily represent the views of other staff members or of the Fund.

The first edition of this Occasional Paper contained an error relating to central government employment in administration in the United Kingdom. This revised edition omits from Appendix Tables 30 through 32 the row showing the functional distribution of central government employment in the United Kingdom. The regional averages and the econometric results shown in Tables 13, 14, 15, 17, and 33, with the associated references in the text, have been changed accordingly.

I Introduction

How many people are employed by the government? How many are employed by the central government compared with state and local authorities? How many are employed in public enterprises? How much are they all paid? How much are they paid relative to each other, or relative to the private sector? Such questions interest people in general and economists and policymakers in particular; yet it is remarkable how little information is readily accessible on these topics.

These topics are interesting at the general level but are important in more specialized ways as well. Only too often are assertions made that government wages in a country are too high or too low or that total government employment is excessive. The statistics necessary to provide a cross-country comparative basis for such assertions simply have not been available. Similarly, in evaluating the size of the public sector, one often focuses on the number of government employees in a particular functional sector (e.g., health, education) on a per capita basis, again without any clear standard of whether the statistics for a given country are reasonable or not. While the experience of other countries is only an additional datum for such an analysis, it is an important one. Similarly, the numbers employed in the public sector and their conditions of employment can influence the entire pattern of employer/employee relationships within the economy, including pay scales, tenure, indexation, and pensions. The size of public sector employment and the amount paid in wages and salaries is thus potentially a lever on employment, skill differentials, staffing levels in the private sector, and, hence, on overall macroeconomic stabilization policy. For instance, if the government grants substantial wage increases to low-paid government employees, this may affect the wage policy for the country as a whole. The way in which such wages and salaries are financed may in turn affect all prices and eventually the balance of payments.

This paper represents a beginning in the effort to assemble the statistics for an international comparison of public sector employment and pay; it seeks to stimulate discussion by highlighting some of the apparent anomalies and differences between existing and predicted patterns or norms. It focuses on several broad topics: (1) the size of central, state and local, and nonfinancial public enterprise employment both on a per capita basis and as a share of total nonagricultural employment; (2) the magnitude of government wages and salaries at each level of government and their relative importance in gross domestic product (GDP), national income, and total wages in the economy; (3) the relative levels of public and private sector salaries; (4) the structure and size of public employment by functional sector; (5) the degree of inequality observed in the salary structure of governments; (6) the pattern of wages across the different occupations commonly found in the government sector; and (7) whether there are any common factors (e.g., per capita income, size of population, type of economic system) that may explain the size of public sector employment, total government wage and salary expenditure, or the level of government wage rates. Finally, the paper provides intercountry indices that may be used in analyzing government wage rates and the level and structure of government employment. Throughout, the paper examines each of these topics in terms of the patterns observed in the developed and developing world and in different regions.

Many methodological questions were encountered before the analysis of data could begin, and these are dealt with in the next section. Sections III–VII use summary measures of the data to discuss some of the questions raised at the start of this paper; some provocative predictions are made in Section VIII. Statistics on individual countries are provided in Appendix I, Tables 19–33.

II Conceptual and Methodological Issues in the Development of the Data Base

Sources of Data

The collection of data on the subject of government employment and wages proved extremely difficult. Neither the International Labor Organization (ILO) nor any of the other United Nations organizations collects statistics on either subject in a standardized way. The Organization for Economic Cooperation and Development (OECD) has occasionally done work in this area but only on a limited basis, including a recent study on the general magnitude of government employment in the OECD countries during the 1970s.[1] Over the last 20 years, a handful of academic studies have been made on the subject.[2]

Given the dearth of studies in the area, one is forced to rely almost entirely on data from national sources. Generally, these are of four kinds: (1) statistical yearbooks; (2) data from budget documents; (3) data provided by personnel ministries, often in such publications as the establishment register; and (4) occasional studies and reports relating to the reform of civil service employment or wage policies within a particular country. However, in the absence of any standardized international effort to collect statistics on government employment, there is no generally accepted set of definitions as to what data should be collected routinely, or how data should be defined. As a result, the variance in the breadth and depth of statistics across individual countries is extremely large. For some countries, information could not be collected on the size of government employment. For other countries where there is a wealth of information, there is often a problem in interpretation of the available statistics.

To obtain as comprehensive a picture as possible on this subject, a letter was sent to almost all member countries of the International Monetary Fund (IMF) asking for any documents or information on the magnitude of government employment, aggregate wage and salary payments, and on the structure of wages and salaries in the government. Table 19, in Appendix I, indicates the countries to which the letters were sent and the number of countries that responded to the initial inquiry and/or to the subsequent request.

All things considered, it is extraordinary how impoverished the data base is. One would think that on a subject of this kind, governments would be able to provide at least some statistics on the size and distribution of government employees and salaries. Yet, it was quite apparent, even from the countries that responded to the request and made an effort to provide this information, that only a handful of countries were able to provide easily statistics on these employment and wage variables. Considering the importance of government employment and wages and salaries in the economies of almost all member governments, it is evident that this issue of paucity of data should be dealt with systematically and remedied in the future. Considerably greater resources need to be invested, perhaps by the ILO, the IMF, or the World Bank, to stimulate an improvement in the statistical data base on government employment and wages.

The Measurement of Government Employment

Several conceptual issues arise in the definition of public sector employment. These may be characterized in terms of the definition of a unit of government, the definition of what constitutes a government employee, and the classification of employees by function.

In principle, the problem of defining the unit of government is the same for the employment issue as it is for the definition of public sector expenditure or revenue. The same institutions or units of government that are used to define the central government, the state and local governments, or the nonfinancial public enterprise sector for financial analyses should also be used for defining these levels of government in terms of employment. The same problems of ensuring comparability in these definitions across countries arise in either case. In this study,

[1] OECD (1982).

[2] See Berg (1969), Rupprecht (1972), Keesing (1975), Gray (1979), Rose (1980), Mieszkowski and Peterson (1981), Haveman (1982). Perhaps the most detailed country study available was recently published in Israel by Zakai (1983).

the classification used for preparing the Fund's *Government Finance Statistics (GFS) Yearbook* has been used wherever possible.

The *GFS* approach requires careful disaggregation of data by institutions, and sometimes by programs within institutions, to ensure a consistent definition of governmental units and functional program categories. The frequent lack of employment data at a sufficiently disaggregated level may force a study such as this one to use a different definition of employment for a particular level of government. This is particularly a problem in many of the Latin American countries where the central government includes large numbers of decentralized agencies.

Cross-country comparisons are also complicated by the different ways governments implement comparable policies. For example, some countries directly operate and manage the health and medical system through the government. In other countries, government is heavily involved in the financing of the medical system (e.g., the Netherlands) but allows the operation and ownership to be within the private sector. Yet when the system is a private one, financed indirectly through government subsidies and government transfer payments, the employees are outside the government sector. These institutional alternatives would imply considerable differences in the size of measured government employment in comparing countries where, in a meaningful sense, the employment in both countries may be equally reliant on government financing.

In many respects, the appropriateness of the definition depends on the question posed. For comparing size of government employment, a *GFS*-type definition may not always be satisfactory, as seen in the above example. For other policy questions, such as the impact of government wage rates on the economy, the *GFS*-type definition may be quite appropriate. For example, in a country with a private medical care system, wage rates in the private sector indeed may be independently determined from the wage rates that would prevail in a government-run medical institution. While this analysis used the *GFS* definitions of units of government, the problems that this can pose in some intercountry comparisons should be acknowledged. Where there was a serious problem or issue at this level, it has been noted in Appendix II, which describes the sources of data for the study.

Differences in the structure of government also create problems in cross-country comparisons of the size of government employment in total and in certain sectors. For example, in most federal countries, important education, health, police, fire fighting, and administrative responsibilities are delegated to the state and local governmental levels. It is therefore meaningless simply to compare the size of the central government across countries without taking into account that the central government in one country may perform many of the functions that in another country are performed at the state and local governmental level—this is particularly a problem when one is comparing the number of government employees in a particular functional sector. In comparisons of this kind, the number of state and local government employees in the health, education, and police sectors at the state and local governmental level have been added, where possible, to those at the central governmental level to produce more accurate measures of the extent of government involvement in these sectors.

The same problem of functional allocation also arises for many of the functions carried out under the auspices of nonfinancial public enterprises. The post office and railroad are examples of activities that, in some cases, are operated by the central government and in other cases by nonfinancial public enterprises. Reliance on the *GFS* definition of what constitutes central government and what constitutes the nonfinancial public enterprise sector in a country often leads to clear differences in definition across countries.

Turning to the second issue, that of defining a government employee, many questions arise. Should one measure the number of employees in terms of man-years worked (as in the Netherlands), in terms of the total number of employees, whether full-time or part-time, or in terms of full-time equivalent employees (as in the Federal Republic of Germany and the United States)? How is a full-time equivalent defined in a country? Can one be certain that the same methodological procedures are used to convert part-time employees to full-time equivalent employees? How should the use of consultants as a "backdoor" form of employment be treated, such as in the defense sector of the United States? Another issue arises in that some countries have a corps of regular or permanent employees involved in public sector capital projects, while in other countries, ministries employ so-called daily paid workers for the implementation of capital projects. In principle, such workers, hired on a daily basis as a function of the level of capital expenditure in a given period, are not permanent government employees and do not appear anywhere in the statistics on government employment. Yet in some countries, reluctance to lay off such workers renders them almost the equivalent of permanent employees. Should these latter employees be included or not included in a measure of government? In general, they have not been included in this analysis. The same problem arises with respect to contractual employees where, in many cases, payments for contracted services do not appear in wage and salary budgets, and the employment implied by such contracting is not defined as a form of government employment, per se. An

examination of the scale and importance of such employment (e.g., in printing and publishing, health services, communications, transport, construction, road repairs) could, and should, form an interesting avenue for research.

Another problem that arises in defining the size of the government labor force is the treatment of defense employees. Military employees are not included in establishment registers, and for security reasons the size of the military is generally not public information. Yet it is clear that the military may constitute a very significant portion of the total work force in a government. Every effort has been made therefore to include the number of military employees in the employment statistics in this paper. Where there are no national statistics on the size of the military force, reliance was placed on the most recent publication on military expenditures of the U.S. Arms Control and Disarmament Agency.[3] A further problem relating to defense employment is whether to distinguish between permanent military employees and draftees. While both are clearly government employees, draftees are paid considerably lower salaries, and inclusion of such employees may lead to an understatement of the average wage in the central government sector. In this study, draftees and permanent military employees have been included in the defense sector without any distinction.

In principle, in deciding what constitutes a "government employee," it would be preferable to use statistics on the actual number of employees, on a full-time equivalent basis, employed as of a given date by a governmental unit. In the absence of any such data, statistics on the formal establishment in specific ministries have been used. High vacancy rates would obviously lead to an overstatement of the magnitude of employment in a given functional sector.

A third issue is the difficulty of classifying government employees by function. This problem is, in principle, no different from that which arises in classifying expenditure on a functional basis. It is well recognized that the traditional institutional division of responsibilities may not correspond to a rigorous functional division, and that given ministries may provide services that overlap functional expenditure categories. It is often difficult in expenditure analysis to separate the different functional components of a ministry's operations, and it proves even more difficult to separate the employees of a ministry by their different functions. Since the division of functional responsibilities varies widely across countries, it is often difficult to develop a clear comparable delineation of employment by function, and the statistics on employees by function presented here must be regarded with considerably more caution than the numbers on the total size of public sector employment. This is particularly the case for such broad and not easily defined sectors such as administration.

[3]United States Arms Control and Disarmament Agency (1982).

The Measurement of Wages and Salaries

The first problem confronting anyone trying to measure the amount of wages and salaries at any governmental level is the definition of what should be included in "wages and salaries." It is common, particularly in developing countries, for many civil servants to receive food, car, and housing allowances as part of their conditions of employment. Yet it is exceptionally difficult to place a value on these nonwage benefits—certainly, it is rare to see a financial valuation of such remuneration in any government budget document. Nonsalary benefits are particularly a problem in countries with large military employment, since traditionally considerable nonwage services are provided to soldiers. Also a problem in this respect is the treatment of bonus payments, the accrued liabilities of the government for future pension payments, and other types of allowances. Where statistics on bonuses, allowances, or fringe payments were readily available, an attempt was made to include such statistics explicitly. Pension payments and accrued liabilities for pensions for present government employees, are not included.

A second problem that arises is the potential inconsistency between (1) statistics on employment that may include so-called daily paid workers and (2) statistics on wages that may relate only to permanent civil service employees and that exclude from the wage and salary budget any payments to daily paid workers. Daily paid employees may simply be paid out of capital funds, and there may be no statistics on the component of such capital funds paid out in wages and salaries.

A third issue relates to the availability of actual expenditure data. Wherever possible, actual wage and salary expenditure were used; however, there were cases where the only source of data on wages was a recent budget document. To ensure that the wage estimates related to comparable employment statistics, budget estimates had to be used rather than actual wage and salary payments.

Finally, the same problems that arose in classifying ministries on a functional basis for employment purposes also bedevil the calculation of wage and salary payments on a functional basis.

Measurement of the Salary of Specific Jobs

The obvious problem that arose in comparing the salaries of employees in similar employment classifica-

tions within and across countries was to ensure that the same job definition was being used. It is, of course, difficult to know whether a clerical officer in one country is, in fact, defined in the same way as a clerical officer in another country. However, after reviewing many government job definitions, the duties and responsibilities of a government clerical officer seemed sufficiently comparable to use the starting salary of this grade as a numéraire. It should be kept in mind that the level of responsibility and required skills may be different from those required in another country for a position with the same nominal title. It was also necessary to define the desired starting salary for any position. If the starting salary was unavailable, the average salary for the position was calculated.

Timing

Only one year was taken for each country. While the numbers employed may not change significantly from one year to another, the pay relative to private sector employees (especially when all prices are changing rapidly) may change quite sharply.[4]

[4] Trinder (1981).

III Issues in the Analysis of Public Sector Employment and Wages: Leverage Implications of Public Employment

A principal motive for analyzing the size of government is the belief that government employment and wage policies have critical implications for wage determination throughout the economy. The larger the government share of employment, the more likely it is to dominate wage rates and awards not only for public sector employees but for the private sector as well, and thus to have a sigificant degree of "leverage." What is the fulcrum point at which government decisions on employment and wages affect employment and pay throughout the economy?

This sort of question is important because in both industrial and developing countries employees in the public sector can view their employer as having no limit to the financial resources available for wages; they start to view themselves as having access to the money supply.[5] Their success in claiming wages higher than their productivity would merit exacerbates the contrast with the private sector (who, eventually, must finance the higher public sector pay). Rapid and unexpected increases in public sector wages have undermined macroeconomic stabilization policies and Fund programs,[6] and such problems can extend even to queries about municipal fiscal integrity.[7]

Measures of the Size of Government Employment

Most studies on the size of government tend to focus on the level of government expenditure or revenue and its relationship to GDP. Another equally germane measure would be the magnitude of government employment. The absolute employment number provides a measure of the quantum of input involved in the provision of public services. The relationships of these employment numbers to both population and measures of the labor force employed in the nonagricultural sector are likely to be indicative of the impact of public sector wage policies on wage rates in the economy, the distribution of income, and the structure of output in the economy. As governments have little direct influence on agricultural wage rates (unless common minimum wage rates apply to the agricultural sector), it is the size of government employment relative to total nonagricultural employment that has been taken as the measure of potential leverage.

Public sector employment may occur at the central government level, state and local authority level, and in the nonfinancial public enterprise sector. General government is defined to include both central government and state and local government employment; public sector employment combines central, state, and local governments, and the nonfinancial public enterprise (NPE) sector. In Appendix I, Tables 20–22 provide the complete set of data on the absolute size of government employment as well as their relationship to employment in the nonagricultural sector, as reflected in ILO statistics,[8] and to the total population. Table 1 summarizes the means of the different variables, classified by region.

In contrasting the relative importance of government employment in the industrial OECD countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States) and the developing world, certain patterns emerge clearly. First, central government is far more significant in nonagricultural

[5] "Workers could make real gains at the expense of the excess profits of a group of employers who were in open or tacit combination to hold wages down. This is no longer the typical situation. It is manifestly not so in the case of a nationalized industry or of public employment. If the miners obtain a higher wage, then either the government's budget revenue suffers through the reduced profits or increased losses of the National Coal Board—in which case it is the general taxpayer or those whose welfare depends upon government expenditures who suffer . . ." Meade (1982), p. 32.

[6] Reichmann (1978).

[7] "The more a municipality pays its workers relative to other local governments, the greater the chance that city will experience fiscal stress." Hunter (1982), p. 146.

[8] The ILO data refer to the number of wage earners and salaried employees in all divisions of economic activity other than agriculture, hunting, forestry, and fishing. In certain cases, the statistics may cover other status groups, such as employers and self-employed workers. However, it should be emphasized that national definitions of employment often differ from the standard international definition. For a discussion and presentation of the data, see ILO (1980).

Table 1. Share of Government Employment in Total Nonagricultural Sector Employment and Population, by Level of Government and Region: Means and Standard Deviations[1]

		OECD Industrial Countries	Developing Countries			
			Total sample of countries	Africa	Asia	Latin America
		(As a share of nonagricultural employment; in percent)				
Central government	($\bar{x}$)	8.7	23.4	30.8	13.9	20.7
	(s)	(5.7)	(16.2)	(15.0)	(3.9)	(21.1)
	(n)	16	31	13	5	9
State and local government	($\bar{x}$)	11.6	4.0	2.1	8.0	4.2
	(s)	(6.0)	(7.3)	(2.6)	(14.7)	(4.4)
	(n)	16	35	16	5	10
General government	($\bar{x}$)	19.2	26.0	33.0	22.2	20.7
	(s)	(5.9)	(13.7)	(15.1)	(16.3)	(4.6)
	(n)	21	31	13	6	7
Nonfinancial public enterprises	($\bar{x}$)	4.1	13.9	18.7	15.7	5.5
	(s)	(2.7)	(11.9)	(14.2)	(10.8)	(4.2)
	(n)	14	18	8	4	5
Public sector employment	($\bar{x}$)	24.2	43.9	54.4	36.0	27.4
	(s)	(7.8)	(22.1)	(21.2)	(23.1)	(13.2)
	(n)	14	23	12	5	5
		(As a share of total population; per 100 inhabitants)				
Central government	($\bar{x}$)	3.1	2.4	1.8	2.6	2.6
	(s)	(1.6)	(1.5)	(1.3)	(1.8)	(1.2)
	(n)	16	35	16	5	10
State and local government	($\bar{x}$)	4.6	0.4	0.2	0.4	0.8
	(s)	(3.0)	(0.7)	(0.2)	(0.4)	(1.1)
	(n)	16	31	15	5	7
General government	($\bar{x}$)	7.2	3.0	1.9	3.1	4.6
	(s)	(2.7)	(2.0)	(1.3)	(1.3)	(2.8)
	(n)	21	36	17	6	8
Nonfinancial public enterprises	($\bar{x}$)	1.5	1.1	0.8	2.1	0.9
	(s)	(0.9)	(1.2)	(0.7)	(2.2)	(0.8)
	(n)	14	20	10	4	5
Public sector employment	($\bar{x}$)	9.0	3.7	2.9	4.6	4.8
	(s)	(3.3)	(2.2)	(2.1)	(2.5)	(2.0)
	(n)	14	20	11	4	4

Sources: Tables 21 and 22.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.

sector employment in the developing countries, averaging 23 percent of such employment in contrast to only 9 percent in the OECD countries. This fact reflects primarily the small share of nonagricultural sector employment in the total labor force in developing countries. In some African countries, the role of the central government in nonagricultural employment is striking, reaching up to 42–46 percent in Benin, Tanzania, and Zambia, and averaging 31 percent for the African countries in the sample. By contrast, in the OECD countries, nonagricultural sector employment is a much larger percentage of the total labor force, such that the role of central government employment on employment in the nonagricultural sector is much less; nevertheless, it is noteworthy that in New Zealand 24 percent of its nonagricultural sector is employed in the central government and in Belgium, 18 percent. The lower figures—3 percent for the Federal Republic of Germany and Canada, and 4.5 percent for the United States—are represented by the federal countries, while the more typical figures for a centrally governed economy in the OECD might be about 10 percent (the United Kingdom) or 8 percent (the Netherlands).[9]

There is considerably larger variance in the ratio of central government employment to nonagricultural sector employment in the developing countries than in the OECD countries. In the developing countries one standard deviation from the mean of this ratio implies a range from 7 percent to 50 percent. In the OECD countries, the range would only be 3 percent to 14 percent.

The clear message from these statistics is the significant impact that government policy on wages and salaries is likely to have on the overall remuneration of employees in the nonagricultural sector in developing countries. Without even taking into account state, local,

[9] In passing, it is perhaps worth noting the absolute numbers employed by the central government in the United Kingdom (2,327,000) compared with those employed by the central government in the United States (4,252,000); on this basis, one central government civil servant in the United Kingdom serves 24 persons but in the United States, 53. This emphasizes the importance of detailed analysis of the specifics of the country situation. The inclusion of the National Health Service in the U.K. Central Government accounts for a significant part of the difference.

and nonfinancial public enterprise employment, central government decisions on wages and salaries in developing countries are likely to affect from 15 to 40 percent of the urban labor market, and therefore to have a pervasive effect on domestic unit wage costs. Clearly, in terms of formal incomes policies or in general wage bargaining, this is likely to be an important influence.

An alternative perspective on central government employment is suggested by an examination of the number of employees per capita. This is a rough measure of the magnitude of public services provided at this level of government, although it, of course, says nothing about the quality of the services or the efficiency with which they are provided. Using this measure, the number of central government employees per capita is considerably higher in industrial countries than in developing countries; this is so despite the relatively greater importance of state and local government employment in the OECD countries. For example, as a share of the population, central government employment in OECD countries averages 3.1 percent as opposed to 2.4 percent in developing countries, with the range of developing countries spanning only 1.8 percent for Africa to 2.6 percent for Asia and Latin America. Some of the countries with a striking number of central government employees per capita are New Zealand (6.9 per 100 inhabitants), Belgium (4.9), Iceland (5.5), Mauritius (5.4), and Swaziland (3.4).

Of course, the legitimate point can be made that it is unreasonable to look only at central government employment, particularly when federal constitutions are considered. The influence of local authorities on wage rate determination in their locality can be pervasive; rates set for unskilled labor (for example, garbage collection, road maintenance), or for skilled local services (for example, teachers, librarians, and administrators) can set a standard for local private sector employers to match. The countries with the largest share of state and local government employees in nonagricultural sector employment were the federal countries, principally within the OECD group, the United States (14.3 percent), Australia (19.5 percent), and among developing countries, India (34.2 percent). However, there are some interesting anomalies particularly within the OECD, where Denmark (19.6 percent), Sweden (25.1 percent), and the United Kingdom (12.6 percent) have remarkably large local governments for countries that are often thought to be dominated by a unified central government.

As a group, state and local government employment averages almost 12 percent of nonagricultural sector employment in the OECD countries in contrast to 4 percent in the developing countries. The difference is even more dramatic if one calculates state and local government employees as a share of the total population: 4.6 per 100 inhabitants in the OECD countries, in contrast to 0.4 in the developing countries. Typically, the latter are much more centralized governments, with the share of local government in nonagricultural sector employment ranging from 2 percent in Africa to 8 percent in Asia. The mean employment share of the central government in total general government employment in those countries is approximately 85 percent (Table 2 and Appendix I, Table 23). This contrasts with a ratio of only 43 percent in the OECD countries. It seems probable that "leverage" will be more powerful for local authorities in OECD countries than in developing countries.

Aggregating employees at the central, state, and local governmental levels, the number of general government employees per capita proves to be significantly more important in the developed countries; the OECD countries average more than 7 per 100 inhabitants in contrast to 3 in the developing countries. Among OECD countries, it is precisely those countries with the centralized government combined with a remarkably large local government component that have the highest number of general government employees per capita, for example, Sweden (14.7), Denmark (11.4), and the United Kingdom (9.6) (Appendix I, Table 21). There also appear to be some regional variations in the significance of general government employment, although the comparisons are more limited given the paucity of data on local authority employment in many countries. The share of general government employees in nonagricultural sector employment is significantly larger in Africa and Asia than in Latin America. The reverse relationship holds with respect to the number of employees on a per capita basis, averaging 3.1 employees per 100 inhabitants in Asia and 4.6 in Latin America, in contrast to only 1.9 in the African countries in the sample.

The broadest definition of public sector employment used here embodies central government, state, local, and nonfinancial public enterprise employment. The employees of nonfinancial public enterprises loom much larger in developing countries, averaging 14 percent of nonagricultural sector employment in contrast to only 4 percent in the OECD countries. The share of nonfinancial public enterprise employees appears to be significantly higher in Africa than in Latin America or, with respect to the mean for the developing world as a whole, equaling 19 percent in the African region, although this is clearly based on a limited sample of countries.

The role of the nonfinancial public enterprise sector in the public sector is also considerably larger in developing countries; as a share of total public sector employment, it averages 29 percent in the developing countries. In the OECD countries, this ratio equals only 16.5 percent, with the remaining government employees divided between the central (35 percent) and state and local (49 percent) government levels. If one argues that the more centralized the employment the easier it is to impose a common wage policy, one would assume that developing

Table 2. Share of Different Units of Government in Total Employment of General Government and the Public Sector, by Level of Government and Region: Means and Standard Deviations[1]

			Developing Countries			
		OECD Industrial Countries	Total sample of countries	Africa	Asia	Latin America
		(As a share of general government employment; in percent)				
Central government	($\bar{x}$)	42.4	85.4	90.2	79.3	81.4
	(s)	(22.2)	(18.6)	(10.6)	(24.5)	(21.2)
State and local government	($\bar{x}$)	57.6	14.6	9.8	20.7	18.6
	(s)	(23.7)	(19.2)	(9.2)	(24.4)	(22.1)
Number of cases		16	31	15	5	7
		(As a share of public sector employment; in percent)				
Central government	($\bar{x}$)	34.9	58.7	65.5	43.3	65.0
	(s)	(19.1)	(20.7)	(15.9)	(20.2)	(22.8)
State and local government	($\bar{x}$)	48.6	12.4	5.5	17.7	15.6
	(s)	(22.3)	(16.2)	(6.5)	(20.1)	(20.0)
General government	($\bar{x}$)	83.5	71.1	71.0	61.0	80.6
	(s)	(8.3)	(15.1)	(12.3)	(22.4)	(12.4)
Nonfinancial public enterprises	($\bar{x}$)	16.5	28.9	29.0	39.0	19.4
	(s)	(8.3)	(15.5)	(12.9)	(22.4)	(12.4)
Number of cases		14	19	10	4	4

Source: Table 23.
[1] $\bar{x}$ = mean; s = standard deviation.

countries have greater leverage on general government wage policy and somewhat less influence over wage rates in the nonfinancial public enterprise sector. Nevertheless, there is evidence that in some of those countries (for example, Zambia and Zaïre) and in some industrial countries (for example, the United Kingdom and France) wage awards to workers in public industries are viewed as crucial for wage determination countrywide.[10]

The more striking figures here are that public sector employees average 44 percent of nonagricultural sector employment in developing countries and 24 percent for OECD countries. Among developing countries, the share of public sector employees in nonagricultural employment in Africa reaches 54.4 percent, in contrast to 27.4 percent in Latin America and 36.0 percent in Asia. In some developing countries, the ratio reaches as high as 87 percent—in Benin—followed closely by Ghana (74 percent), Zambia (81 percent), and India (72 percent) (Appendix I, Table 22). Within the OECD, it is as noteworthy that, in New Zealand, 36.5 percent of nonagricultural sector employment is in the public sector, as it is that this ratio reaches 26.8 percent in Ireland, 33.8 percent in Sweden, 32.8 percent in Belgium, and 30.8 percent in the United Kingdom. The gap between the "least governed" economy (the public sector in the United States employs 19.6 percent of nonagricultural sector employed) and the "most governed" economies (New Zealand and Sweden) is large.

On a per capita basis, the ratio of public sector employees in the OECD countries is almost double that observed in this sample of developing countries. The ratio is higher in Latin America—public sector employees averaging 4.8 per 100 inhabitants in contrast to 2.9 in Africa, although again this is based on a limited sample of countries.

The literature suggests that, whereas the influence of public sector wage awards is important in many European countries (for example, the United Kingdom, Sweden, France, and Ireland), it is not in the United States. The crucial "breakpoint" might be said to be public sector employment between 20–25 percent of the nonagricultural sector employed. Over that figure, public wage awards seem to affect national wage rate determination; under it, the leverage appears to be less important.[11]

Measures of the Size of Government: Wages and Salaries

The impact of government employment on an economy can also be examined in terms of the weight of government wages in total output and value added. There are several ways of viewing this relationship. Table 3 shows the mean share of wages for central government, state and local government, and nonfinancial public enterprises, respectively, in general government and public sector wages. (See also Appendix I, Table 24.) As

[10] For another discussion of these issues, see ICPE (1982).

[11] Influences in addition to the absolute share of public sector employment may generalize government awards through the economy—viz., the centralization of wage award determination (the Netherlands) or the automatic indexing of wages (Italy).

Table 3. Share of Different Units of Government in Total Payroll of General Government and the Public Sector: Means and Standard Deviations[1]

			Developing Countries			
		OECD Industrial Countries	Total sample of countries	Africa	Asia	Latin America
		(As a share of general government wages; in percent)				
Central government	(x̄)	45.5	91.2	96.7	. . .	80.9
	(s)	(22.4)	(17.7)	(5.9)	(. . .)	(24.9)
State and local government	(x̄)	54.5	8.8	3.3	. . .	19.1
	(s)	(22.4)	(17.7)	(5.9)	(. . .)	(24.9)
Number of cases		11	23	9	2	9
		(As a share of public sector wages; in percent)				
Central government	(x̄)	43.6	64.0	75.9	. . .	54.4
	(s)	(23.9)	(25.5)	(17.7)	(. . .)	(28.4)
State and local government	(x̄)	38.9	14.2	2.4	. . .	23.7
	(s)	(22.8)	(16.2)	(3.8)	(. . .)	(16.3)
Nonfinancial public enterprises	(x̄)	17.5	21.8	21.7	. . .	21.9
	(s)	(10.9)	(15.5)	(16.4)	(. . .)	(16.7)
Number of cases		5	9	4	1	5

Source: Table 24.
[1] x̄ = mean; s = standard deviation.

one would expect, federal governments typically exhibit a structure where more than 70 percent of total government wages are paid to state and local governments (for example, in the United States, Canada, and the Federal Republic of Germany). The only country in the sample outside the OECD with a similar government structure (Brazil) shows a 40–60 split between central and state and local government wages.

These figures are not unexpected, but what is interesting is how high the local government wage bill is, compared with that of the central government, in many countries where government is generally thought of as centrally dominated. For instance, it is striking that in Japan 69 percent of the wage bill is paid to local government officials, and almost 70 percent in Denmark. In the Netherlands, 58 percent is paid to local government and in the United Kingdom, 51 percent; in other countries (for example, Argentina and Costa Rica) the percentages paid to local government are still large (50 percent and 43 percent, respectively). This situation emphasizes how important wage settlements are at the local level in such countries and how important it is, in speaking of national wage policy, to appreciate whether or not the central government has de facto control over local government pay and hiring.[12] For example, one of the major confrontations in the last four years in the United Kingdom has been between the central government attempting to enforce its pay policy down to the local level and local authorities resisting such pressures.

In terms of the total public sector wage bill, the United Kingdom is noteworthy for having an almost equal split of total wage and salary payments between the central government, local government, and the nonfinancial public enterprise sector. In other OECD countries, the nonfinancial public enterprises account for a smaller share of the total public sector wages bill. However, in some developing countries, the wage bill of the nonfinancial public enterprises sector can be as high as 50 percent of the total public sector wage bill (e.g., in Brazil) and 45 percent (e.g., in Zambia). Again, it is clear that in these countries public sector decisions on payments to employees in public enterprises have influence not only on the public sector's wage bill but also on the wage determination process in the country as a whole, at least in the nonagricultural sector.

Table 4 shows central government wages as a percentage of total wages, national income at market prices, and GDP. There are interesting features in these figures; for instance, the highest proportion is that of Greece (19 percent of national income). Even countries with an extremely high proportion of public sector employees among the nonagriculturally employed do not necessarily have a particularly large claim on national income, for example, India at 3.8 percent and New Zealand at 13.3 percent (Appendix I, Table 25).

Central government wages as a share of GDP tend to hover between 4 and 8 percent of GDP, with a higher share in the developing countries (7.9 percent) than in OECD countries (5.2 percent). One major contrast is in the share of state and local government wages, which averages 6.4 percent among the OECD countries and only 0.8 percent in the developing countries. This leads, not surprisingly, to a significantly higher share of general

[12] It may not be appreciated that Adolph Wagner himself thought his "law of increasing expansion of public . . . activities" applied particularly to those countries where "administration is decentralized and local government well organized." See A. Wagner in Musgrave and Peacock (1958), p. 8.

Table 4. Government Wages Relative to Total Wages, National Income, and GDP: Means and Standard Deviations[1]

			Developing Countries			
		OECD Industrial Countries	Total sample of countries	Africa	Asia	Latin America
		(As share of total wages in the economy; in percent)				
Central government	($\bar{x}$)	8.7	19.8	22.6	17.2	14.7
	(s)	(4.6)	(9.9)	(9.5)	(11.9)	(7.2)
	(n)	20	35	14	4	13
State and local government	($\bar{x}$)	11.6	3.6	1.7	. . .	6.2
	(s)	(6.7)	(4.5)	(2.0)	(. . .)	(5.4)
	(n)	11	11	5	1	5
General government	($\bar{x}$)	20.7	20.0	24.8	. . .	17.0
	(s)	(7.3)	(7.3)	(4.3)	(. . .)	(7.1)
	(n)	11	11	5	1	5
Nonfinancial public enterprises	($\bar{x}$)	4.6	8.4	8.6	. . .	9.7
	(s)	(4.0)	(5.1)	(6.6)	(. . .)	(5.1)
	(n)	5	10	4	2	4
Public sector	($\bar{x}$)	22.9	32.0	. . .	. . .	. . .
	(s)	(7.9)	(6.3)	(. . .)	(. . .)	(. . .)
	(n)	5	6	3	1	3
		(As share of national income at market prices; in percent)				
Central government	($\bar{x}$)	6.4	9.4	10.1	7.5	8.5
	(s)	(3.4)	(4.3)	(4.0)	(4.7)	(4.5)
	(n)	21	43	18	6	14
State and local government	($\bar{x}$)	8.2	1.5	0.7	. . .	2.7
	(s)	(4.7)	(2.2)	(0.9)	(. . .)	(2.9)
	(n)	11	14	6	1	6
General government	($\bar{x}$)	14.6	11.6	13.5	. . .	10.6
	(s)	(5.0)	(3.3)	(1.3)	(. . .)	(3.8)
	(n)	11	14	6	1	6
Nonfinancial public enterprises	($\bar{x}$)	3.7	3.8	4.1	. . .	4.0
	(s)	(2.9)	(3.1)	(4.5)	(. . .)	(2.3)
	(n)	6	12	5	2	5
Public sector	($\bar{x}$)	17.0	16.7	18.5	. . .	15.0
	(s)	(6.2)	(4.5)	(5.7)	(. . .)	(2.6)
	(n)	5	8	4	1	4
		(As share of GDP; in percent)				
Central government	($\bar{x}$)	5.2	7.9	8.3	6.0	7.2
	(s)	(2.6)	(3.4)	(3.3)	(3.4)	(3.4)
	(n)	21	57	25	7	18
State and local government	($\bar{x}$)	6.4	0.8	0.4	. . .	1.8
	(s)	(3.6)	(1.6)	(0.7)	(. . .)	(2.2)
	(n)	11	22	9	2	8
General government	($\bar{x}$)	11.5	8.8	9.5	. . .	9.1
	(s)	(3.7)	(2.4)	(2.4)	(. . .)	(2.5)
	(n)	11	22	9	2	8
Nonfinancial public enterprises	($\bar{x}$)	2.7	2.8	3.1	. . .	2.8
	(s)	(2.2)	(2.2)	(3.0)	(. . .)	(2.0)
	(n)	6	13	5	2	6
Public sector	($\bar{x}$)	13.4	12.4	14.2	. . .	11.0
	(s)	(4.8)	(3.8)	3.6	(. . .)	(3.6)
	(n)	5	9	4	1	5

Sources: Tables 25 and 26.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.

government wages in GDP among the OECD countries, averaging approximately 11.5 percent in contrast to only 8.8 percent in the developing world. Fewer data exist on wages in the nonfinancial public enterprise sector, but those available suggest the average share of wages in the OECD and non oil developing countries to be comparable at 2.7 percent and 2.8 percent, respectively.

Another measure of the potential weight of government wage policy is the ratio of government wages to total wages in the economy. Among developing countries, central government wages are 19.8 percent of total wages, with the highest ratios in the African region and the lowest in Latin America (Table 4 and Appendix I, Table 26). Among the OECD members, central government wages are only 8.7 percent of the total; but if one also takes account of state and local government units, total general government wages reach 20.7 percent in the OECD, roughly comparable to the weight of general government wages among developing countries (20 percent).

It is of obvious interest to compare the share of government wages in total wages in the economy to the share of government employment in total nonagricultural employment. The comparison is a valid one only for economies where the "compensation of employees" in the national income accounts is derived primarily from nonagricultural sector employment.[13] In making this comparison, important differences emerge between developed and developing countries.

In the OECD, the weights of general government wages and employment in total wages and total nonagricultural sector employment are similar (20.7 percent and 19.2 percent (see Table 1), respectively); in the developing countries, the employment share dominates the wage share (26 percent relative to 20 percent) suggesting that the average wage in the government sector of the developing countries is less than that in the nonagricultural private sector (including nonfinancial public enterprises). This finding suggests that government sector employees in those countries are not able to translate their strength in numbers into commensurate strength in their wage rates relative to that of their peers in the nonagricultural component of the private sector. (See also Section V.) Perhaps this reflects the fact that the government sector is used in many developing countries as a vehicle to absorb some of the unemployment, and the low productivity of underutilized government employees may be reflected in their lower relative wage rates. It may also reflect the view stated by the Malaysian Government, "Experience has shown that any increase in the pay of Government executives as a means to induce them to remain in the service will only be met by a corresponding or greater increase in the offers made by the Private Sector for the executives."[14]

Finally, does the weight of public sector wages in national income affect the ultimate distribution of national income between labor and capital? In other words, is a high public sector wage share merely offset by a lower private sector wage share or does it bias the overall distribution of national income toward labor? A simple econometric test of this hypothesis has been constructed, as indicated in Table 5, suggesting that an increase in the share of central government wages in national income does lead to an almost concommitant increase in the total share of wages in national income. On a more limited sample, the share of state and local governmental wages in national income has no effect in the overall wage share. The higher the per capita income level, the higher the overall wage share.[15]

Linkages Between Wage Expenditure and Total Public Expenditure

In an earlier study on public expenditure, the authors argued that the functional structure of public expenditure was a key determinant of the magnitude of public sector expenditure on any economic category of public expenditure, of which wages and salaries are among the most central.[16] This is also a factor underlying the relatively higher importance of wages at the state and local government level. Whereas in many of the developed countries a significant share of central government expenditure relates to social cash transfer payments or is for services commissioned outside the public sector (via outside contracting), local government expenditure is devoted largely to the provision of services. The critical importance of the functional composition of expenditure emerges clearly in the sample of countries in this study.

For example, if one relates the share in GDP of central government wages to the share in GDP of total central government expenditure, one observes (Table 6) a clear positive relationship up to a per capita income of US$1,000 and then a sharp negative relationship at higher per capita income levels. The significance of this reversal is the increasingly important role played by government subsidies and transfers as per capita income rises. If the central government's wage share in GDP is

[13] The correspondence breaks down for economies in which the wage-earning labor force in a plantation sector in agriculture (which is not considered part of the nonagricultural labor force) is a significant element in the category of "compensation of employees" in national income—Sri Lanka being the most obvious example of such an exception.

[14] Federation of Malaysia (1976).

[15] A test was made of the hypothesis that the effect might be different depending on the per capita income level of the country concerned. Multiplicative per capita income dummies associated with a per capita income of more than US$1,000 were tested and found to be of little significance.

[16] Tait and Heller (1982), p. 20.

related to the share in GDP of public expenditure *exclusive* of subsidies, there is a uniformly direct relationship, regardless of the per capita income level. Relating the wage share in GDP to the share in GDP of central government expenditure on different functional categories of expenditure also supports this hypothesis. Expenditure on education, public administration, and defense prove to be wage intensive; expenditure on social security, health, and economic services prove to have little impact on the wage share. (See Table 6.)

Table 5. Determinants of the Wage Share in National Income

(t-statistics in parentheses)

Independent Variables / Dependent Variables	Share of Central Government Wages in National Income	Share of State and Local Government Wages in National Income	Per Capita Income (In thousands of U.S. dollars)	Constant	R^2 (n)[1]
Share of total wages in national income	0.65 (1.62)		0.03 (7.14)	0.40 (9.01)	0.51 (54)
Share of total wages in national income	0.99 (1.68)	−0.1 (−0.17)	0.02 (3.48)	0.45 (6.43)	0.52 (21)

[1]n = number of observations in the sample.

Table 6. Functional Expenditure Determinants of Central Government Wage Expenditure[1]

(t-statistics in parentheses)

Independent Variables / Dependent Variables	Total Central Government Expenditure	Total Central Government Expenditure (Excluding Subsidies)	Expenditure on: Economic services	Education	Health	Social security welfare	Defense	Public administration	Constant	R^2 (n)[2]
Central government wages:										
For countries with per capita income ≤ US$1,000	0.14 (5.43)								3.93 (5.08)	0.30 (71)
For countries with per capita income > US$1,000	−0.47 (−2.95)								3.93 (5.08)	0.30 (71)
Central government wages		0.25 (7.46)							2.36 (3.42)	0.49 (65)
Central government wages			−0.03 (−0.15)	0.77 (3.30)	−0.17 (−0.68)	−0.07 (−1.15)	0.14 (1.67)	0.34 1.64	3.30 (3.35)	0.46 (55)

[1]All variables are taken as a share of GDP.
[2]n = number of observations in the sample.

IV Determinants of the Size of Government Employment: An Alternative View of Wagner's Law

The literature on the determinants of government employment is thin.[17] Among empirical works, only Martin (1982) and Lindauer (1980) have attempted any econometric explanation of the determinants of government employment. What is interesting is that such analyses fit within the framework of efforts to test the validity of Wagner's law, which posited the growth of the government sector over time. Most tests of Wagner's law have focused on the growth of the share of government expenditure, in real or nominal terms, as a share of GDP.[18] Yet, clearly, growth in the size of government employment as a share of the total labor force or population over time might constitute an equally valid alternative test of this hypothesis. If public sector wages and salaries are strongly correlated with the size of the public sector (and from the discussion on pages 12–13 it appears that they are), then government employment and pay could be a good proxy measure of Wagner's law. This would be a strong result in the sense that the growth of the public sector in terms of expenditure has also occurred in many developed countries by means of subsidies and transfers or through the contracting out of employment and services rather than through direct employment.

Wagner suggested that numerous "workers" (his quotes) forming part of the complicated bureaucracy will have a lower efficiency, and hence their employment and pay will be an increasing burden on the economy.[19] Studies by Rose (1980) and Martin (1982) focused on whether the share of government employment in population has risen over time, but they focused on OECD countries. Martin also examined the relative importance of the level of development (as proxied by per capita income), demographic structure (as proxied by the dependency ratio), and the female dependency rate as determinants of the share of general government employment in total employment. Lindauer's study of African countries sought to explain per capita public employment over time, primarily as a function of the size of a country (as proxied by its population size) and per capita income.

Lacking time series observations, the alternative test here of Wagner's law is essentially a test of whether the number of employees per capita rises with per capita income. This model also tests (1) whether there are economies or diseconomies of scale in government, in the sense of an increasing or decreasing share of government in total population as total population rises, and (2) whether the type of economic system—capitalist, mixed, or socialist—affects the government employment share.[20] Government employment was examined both in its aggregate measures—general government and public sector employment—and in its disaggregated components: central government, state and local government, and nonfinancial public enterprises.

In these estimations, four specifications on per capita income were tested: (1) a direct linear relationship, (2) a hyperbolic relationship (for example, the inverse of per capita income), (3) a logarithmic relationship, and (4) a semilogarithmic relationship. The choice criterion was primarily the goodness of overall fit. A test was made of the possibility that the nature of the relationships might differ according to whether the country was developed or developing. For each equation, a test was made of whether the coefficient of each independent variable was higher or lower for countries that were above or below a given per capita income level. The per capita income cutoff was chosen to optimize the statistical fit of the relationship.[21] An index variable was used to proxy the type of economic system. The economic system index variable ranged from a value of one for a capitalist economy to four for a completely socialist economy.[22] Since the index values are arbitrary, only the sign of the

[17] Keesing (1975), Economic Commission for Europe (1979), Lindauer (1981), Rose (1980), and Martin (1982).

[18] For examples of this literature, see Musgrave (1969), Beck (1979), and Heller (1981).

[19] Wagner in Musgrave and Peacock (1967), p. 2.

[20] The economic indices are described in Bilson (1982).

[21] Each regression was estimated using multiplicative dummies associated with a cutoff per capita income that ranged from US$200 to US$4,000 (e.g., for any given regression $y = ax + bxDi + c + e$, where Di is 0 if per capita income $\leq$ i and 1 if $\geq$ i). Simulating across different i, the i is chosen that minimizes the sum of the squared errors. Where the multiplicative dummy has been omitted from the results in Table 7, it means that the multiplicative dummies were insignificant, regardless of the cutoff per capita income level.

[22] A value of 1 = a capitalist system, 2 = a capitalist-socialist system, 3 = a capitalist-statist system, and 4 = a socialist system, Bilson (1982).

Table 7. Determinants of Government Employment

(t-statistics in parentheses)

Dependent Variables \ Independent Variables	Logarithm of Per Capita Income (PCI)	Per Capita Income[1]	Inverse of Per Capita Income	Logarithm of Population	Population[2]	Economic System	Constant	R^2 (n)[3]
(Dependent variables as percentage of employment in nonagricultural sector)								
Central government employment[4]	0.35 (6.0)			0.19 (4.43)		0.01 (0.19)	4.3 (11.0)	0.57 (47)
State and local government employment								
For countries with PCI ≤ US$1,200		0.39 (1.31)			0.05 (6.29)	1.26 (1.70)	2.6 (1.1)	0.60 (44)
For countries with PCI > US$1,200		0.11 (1.01)			0.01 (1.67)	1.26 (1.70)	2.6 (1.1)	0.60 (44)
Nonfinancial public enterprise employment								
For countries with PCI ≤ US$600			5.78 (5.53)		0.03 (−2.3)	3.17 (2.74)	−3.84 (−1.47)	0.72 (32)
For countries with PCI > US$600			10.90 (2.23)		0.01 (1.26)	3.17 (2.74)	−3.84 (−1.47)	0.72 (32)
General government employment								
For countries with PCI ≤ US$1,400			3.95 (3.12)		0.01 (0.53)	3.55 (2.61)	14.7 (5.2)	0.49 (51)
For countries with PCI > US$1,400			−13.9 (−1.9)		0.01 (0.53)	3.55 (2.61)	14.7 (5.2)	0.49 (51)
Public sector employment								
For countries with PCI ≤ US$600			2.24 (1.46)		0.04 (1.24)	10.6 (3.35)	5.63 (0.75)	0.40 (37)
For countries with PCI > US$600			14.7 (1.93)		−0.02 (−0.76)	10.6 (3.35)	5.63 (0.75)	0.40 (37)
(Dependent variables in terms of number of employees per 100 inhabitants)								
Central government employment								
For countries with PCI ≤ US$800	0.10 (0.26)			−0.39 (−3.19)		−0.18 (−1.22)	5.44 (5.63)	0.57 (50)
For countries with PCI > US$800	0.82 (1.73)			−0.60 (−1.92)		−0.18 (−1.22)	5.44 (5.63)	0.57 (50)
State and local government employment		0.04 (7.23)		— (0.9)		0.40 (1.54)	−0.92 (−1.42)	0.56 (46)
General government employment[4]	0.41 (9.44)			−0.02 (−0.70)		0.02 (0.34)	0.21 (0.55)	0.64 (56)
Public sector employment[4]	0.35 (6.84)			0.01 (0.11)		— (—)	0.48 (0.68)	0.62 (34)

[1]In thousands of U.S. dollars.
[2]In thousands.
[3]n = number of observations in the sample.
[4]The dependent variable is taken in logarithmic terms.

coefficient of this variable is important as a qualitative indicator.[23]

The results of the analysis are indicated in Table 7. The clearest result is that government employment tends to *increase* on a per capita basis as per capita income rises. While the specification may depend on the precise employment variables under consideration, the sign of the relationship is generally unaffected. Only at the central government level does the relationship between employment per capita and per capita income differ between developed and developing countries. For countries with per capita income that is less than US$800, there is no significant relationship; above that level, there is a direct relationship between per capita income and central government employment per capita. The relationship between state and local government employment is strong, leading to a clear relationship between both general government and public sector employment per capita and per capita income. No relationship emerged between nonfinancial public enterprise employment per capita and per capita income. These results support Wagner's hypothesis that government employment growth (and especially local government growth), in terms of the number of employees per capita, rises with per capita income.

Focusing on the government employment variables as a share of the nonagriculturally employed, the sign of the relationship between the share of government and per capita income *does* differ between developed and developing countries. The central government employment share declines unambiguously as per capita income rises, with no difference in the magnitude of the relationship by group of countries. Conversely, the share of state and local government employment increases, although the increase is greater for a given change in per capita income, for the group of less developed countries (with per capita income of less than US$1,200). Given these offsetting effects, one finds that for countries with per capita income that is less than US$1,400, the general government employment share declines hyperbolically as per capita income rises; above that level, the employment share increases with increases in per capita income. For the smaller sample of countries for which data on nonfinancial public enterprise employment are available, the share of such enterprises among the nonagriculturally employed declines hyperbolically as per capita income rises. The effect of this latter relationship is to ensure that the share of public sector employment among the nonagriculturally employed declines with per capita income, with the rate of decline greater among countries at per capita income levels that are above US$600.

The scale of a country, as proxied by the size of population, proved to be negatively and significantly correlated with the share of central government employment in both nonagricultural sector employment and total population. The larger the population, the lower the central government employment share; the obvious corollary relationship, that the share of state and local government would increase, was true only vis-à-vis the share in nonagricultural sector employment. State and local government employment per capita is not significantly influenced by population size; perhaps as a result, neither is general government nor public sector employment.

The type of economic system also proved to be an important factor in explaining the share of government employment in nonagricultural sector employment. The more centrally planned the economy, the higher the share among the nonagriculturally employed of employees in the state and local government, nonfinancial public enterprise sector, general government, and public sector. However, on a per capita basis, the type of economic system does not appear to have a significant impact on the size of government or public sector employment.

The strength of the overall relationships is remarkable given the cross-sectional nature of the data base. With the exception of the equation explaining nonfinancial public enterprise employment per capita (where the R^2 was insignificant), the R^2 of the equations exceed 0.40 and range as high as 0.72.

[23] It is also realized that "tax handles" increase the ability of the state to expand taxes and hence expenditure, so that government employment could be thought to be a function of the taxable capacity. See Musgrave (1969).

V Are Public Sector Wages Too High?

The obvious question is "high in relation to what"? Generally, public sector wages are measured against private sector wages and are perceived as "too high" or "too low" relative to remuneration for equivalent services performed in the private sector. Indeed, this can be codified to the point where public sector wages are fixed by a comparator formula that links them to private sector wage rates and scales.[24] The comparison that can be made from the figures in this sample cannot say whether public sector wages are "too high or not" in the sense that Martin Feldstein argued when he cited the large number of applicants for air traffic controller jobs as evidence that the wages offered in the public sector were too high (his policy recommendation was to reduce wages).[25]

The base of comparison is obviously central to this issue. Government wages in an economy with a large agricultural sector may be low vis-à-vis the private sector and yet be a significant multiple of the average per capita income of the population as a whole. Central government wages may be high relative to those prevailing at the state and local governmental level or in the nonfinancial public enterprise sector. Moreover, "any analysis of the sectoral distribution of pay which solely examines the public and private sectors in total will mask considerable heterogeneity within each sector."[26] Again, the overall evidence on pay for any one country shows "that there are considerable fluctuations in the relative pay of workers in the public and private sectors . . . . Comparisons of pay in single years or even two-or three-year averages can therefore be particularly misleading and results can be very sensitive to the benchmarks chosen."[27]

Perhaps the most obvious, and most readily calculable, measure of the relative pay of civil servants is the ratio of the average wage per central government employee to GDP per capita. (See Table 8 and Appendix I, Table 27.) This ratio reflects the average wage for all employees, including the military, and thus probably understates the implied ratio of civilian wages relative to GDP per capita. The range of this ratio is remarkable. Whereas in the OECD countries the government average wage is approximately 1.7 times the per capita income, in the developing countries it is approximately 4.4 times that income. The range of variances is equally extreme. Among OECD countries, the variance is low, with the lowest ratios at 1.5 in Sweden and Canada and the highest being 2.5 in Ireland. Among developing countries, the lowest ratio is 1.2 in Singapore, the highest 15.1 in Burundi. The regional variation is even wider, with the ratio averaging 6.1 in the African region and 2.9 in both Asia and Latin America. In Africa the ratio is highest in such countries as Benin, Burundi, and Senegal (ranging from 10 to 15) and is lowest in Mauritius and South Africa (equaling 2 and 3.8, respectively). In the Asian region, there is a much lower variance in the ratio. India and Korea have the largest ratios (4.8) and Singapore the lowest (1.2).

Some of the differences between the developed and developing countries in terms of this measure may reflect the high educational requirements associated with public sector employment and the relative scarcity value of educated workers. In a developed country, the contrast between the educational qualifications of public and private sector employees is likely to be considerably less. In some countries, such as Senegal, reliance on expatriates may skew the ratio upward.

A simple model has been developed to explain the variance in this ratio, assuming it to be a function of per capita income, the shares of central government employment, and nonfinancial public enterprise employment in the nonagriculturally employed. In effect, the latter two variables are intended to provide a measure of the degree of leverage implied by the relative importance of government employment in the nonagricultural sector. Again, a test was made of the hypothesis that the slope of any relationship to per capita income might shift at a given level of per capita income.

The results (Table 9) suggest that the ratio of the average central government salary to GDP per capita rises with per capita income for countries with a per capita income that is less than US$600. Beyond that level, there does not appear to be any statistically significant relationship between the salary multiple and per capita income. A high share of central government employment in nonagricultural sector employment does

[24] Direct links of this sort exist in Canada, Denmark, France, the Federal Republic of Germany, Italy, and the United States. See discussion in *Inquiry into Civil Service Pay (1982)*.

[25] Feldstein (1981).

[26] Trinder (1981), p. 55.

[27] *Ibid.*

Table 8. Alternative Measures of the Level of Government Wages[1]

		OECD Industrial Countries	Developing Countries: Total sample of countries	Developing Countries: Africa	Developing Countries: Asia	Developing Countries: Latin America
Multiple of average central government wage to GDP per capita	($\bar{x}$)	1.74	4.44	6.05	2.90	2.94
	(s)	(0.41)	(2.91)	(3.27)	(1.74)	(1.00)
	(n)	16	33	16	5	8
Ratio of average central government wage to average wage in manufacturing sector	($\bar{x}$)	1.25	1.75	1.58	...	2.16
	(s)	(0.30)	(1.15)	(0.93)	...	(1.54)
	(n)	15	20	8	3	6
Ratio of average central government wage to implied average wage outside the central government[2]	($\bar{x}$)	1.13	1.16	0.80	...	1.28
	(s)	(0.40)	(0.91)	(0.32)	...	(0.35)
	(n)	15	17	9	3	4

Sources: Tables 27 and 28.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.
[2] Including the state and local government, nonfinancial public enterprise, and private sectors.

not seem to have any significant effect on this ratio. On the other hand, in the smaller sample of countries for which data on nonfinancial public enterprise employment are available, a high share of public sector employment among the nonagricultural employed has a clear, positive impact on the ratio.

The regional variations in the multiple of salaries to GDP per capita among low per capita income countries should be emphasized. Civil servants in Africa appear to be much better off relative to the general population than their counterparts elsewhere in the world. Where central government employment represents more than 20 percent of the nonagriculturally employed and those government servants are paid an average 4.8 times more than the income per capita (for example, India), the public sector might seem to be a somewhat privileged group; even if the central government were only 10 percent of total urban employment, the fact that their wages are 5.7 times higher than the mean per capita income (for example, Egypt) must still set them apart.[28]

There are several other alternative approaches to gauging the relative level of public and private sector wages from this relatively macroeconomic data base. In the discussion on pages 6–9, it was noted that it is possible to compare the relative weights of central government wages and employment in total wages and nonagricultural wage employment in the economy, respectively. Implicitly, this yields the ratio of the average wage in central government to the average wage outside the central government (for example, in state and local governments, nonfinancial public enterprises, and the private nonagricultural wage sector). The validity of the ratio is subject to the qualifications concerning the coverage of nonagricultural sector employment and total compensation of employees in the national income accounts. The means of these wage relatives are presented in Table 8 and the individual country statistics in Appendix I, Table 28.

In most countries for the sample, the coefficient is above one, showing that central government employment is better paid on average than is private sector employment. This situation is not necessarily surprising, as, in poorer countries, the educational requirements of public sector employment are often much higher than that of private sector employment. In such countries as Canada, Japan, Denmark, and the Federal Republic of Germany, the public sector is at least one-third better paid than the private sector. However, when the wages of the state and local governments are added to those of the central government and are compared with the pay in the private sector *plus* the nonfinancial public enterprises, the relative advantage of government pay falls, compared with that of the central government alone for Japan, Denmark, and the Federal Republic of Germany. This fact may reflect the capital city wage differential that central governments must pay.

However, it is interesting to note that for the Netherlands (which is unusual in this case), the expansion of the public sector to include state and local authorities increases the relative advantage of government pay. In the United Kingdom, considering the central government alone, average wage payments are slightly higher than in the private sector. However, when the central govern-

[28] It is recognized that it is not necessarily true that such civil servants are paid so well but that other workers are so poor. This statement is not intended to be facetious. Sociologically, the acceptable pay is influenced by foreign practices and lingering memories of colonial practices. Economically, scarcity value and possible "brain drain" may be significant influences.

ment and local authorities are combined, the payment to the broader definition of government is almost exactly the same as in private industry; but, in this case, when the public sector is expanded to include the pay of those in nonfinancial public enterprises, the advantage of public sector employment again increases relative to private sector employment. This finding suggests that employees in nonfinancial public enterprises have relatively better pay than those employed in the private sector.

Table 8 shows that while those employed in central government in developing countries are, in general, better off on average than the average person employed in the private sector, central government employment does not appear to be any more favored in the OECD countries. The questionable validity of the comparisons is also raised for some of the countries considered, notably Korea, Egypt, India, and Zambia. The calculated ratios would suggest that, in Korea, public sector average wages are more than four times the size of those in the private sector, apparently making this the relatively best paid public sector employment in the sample; the second best paid public sector employees, compared with the average private wage earners, are in Egypt, where the average pay appears to be almost two and one-half times that of the private sector. Another interesting anomaly in the developing countries sample is Zambia, where central government wage payments appear to be approximately one third as high as those in the private sector.

Another obvious approach to making a public/private sector comparison is through the use of ILO wage rate data. The statistical series on wage rates in manufacturing affords the most comprehensive comparison, and thus offers a different sectoral coverage than is implied from the national income accounts measure above. The regional means in Table 8 suggest that the average central government wage is higher than that prevailing in the manufacturing sector, with the margin considerably wider in the developing countries than in the OECD region. As noted above, the relative central government wage is higher in Latin American countries in the sample than in the African ones.

In effect, the differential between African wages in the government and modern manufacturing sectors are less than those that seem to prevail in Latin America; on the other hand, the differentials in Africa between government wages and per capita income are far more stark than in Latin America or Asia, as has already been indicated. Also, there is no obvious relationship between the observed differentials using the national income data and those derived from the ILO data. Is it simply the effect of service employment that leads Korea to have a low average private sector wage and a relatively high average manufacturing sector wage? Or, are these the coverage difficulties alluded to above? The same questions apply for such countries as Argentina, India, Mauritius, Swaziland, and Zambia. These ambiguities in the results suggest using extreme caution in applying these measures; perhaps the ratio of average central government wages of GDP per capita may be preferred as a measure of the appropriateness of the government's wage level.

Table 9. Determinants of the Ratio of the Average Central Government Wage to GDP Per Capita

(t-statistics in parentheses)

Dependent Variables \ Independent Variables	Per Capita Income (PCI) *(In thousands of U.S. dollars)*	Central Government Employment as a Share of Nonagricultural Employment	Public Sector Employment as a Share of Nonagricultural Employment	Constant	R^2 (n)[1]
Ratio of average central government wage to GDP per capita					
Countries with PCI ≤ US$600	0.50 (3.53)	0.02 (1.36)		3.09 (5.37)	0.58 (46)
Countries with PCI > US$600	— (−3.72)	0.02 (1.36)		3.09 (5.37)	0.58 (46)
Ratio of average central government wage to GDP per capita					
Countries with PCI ≤ US$600	0.76 (3.99)		0.05 (3.02)	1.05 (1.09)	0.71 (27)
Countries with PCI > US$600	— (−4.09)		0.05 (3.02)	1.05 (1.09)	0.72 (27)

[1](n) = number of observations in the sample.

VI The Structure of Government Wages by Level of Government and by Occupational Groupings

The structure of wages within the government civil service has broad implications for many important policy issues. The spread of wages between the bottom-paid and top-paid civil servants is one kind of incentive for productivity and advancement within the government.[29] In a country with a significant share of government employment in the modern labor force, the equity of the government's salary structure may also influence the degree of equality of the overall income distribution. The wage rates set for particular occupational categories will influence the likelihood of government service being attractive or unattractive relative to private sector alternatives. This section presents data that offer insights on the relative pay of government employees across occupations and levels of government as well as on the degree of equality in a country's civil service salary structure.

Wage Levels Across Elements of the Public Sector

There are only limited data on the average salary per employee in different units of the government, and these are limited primarily to the federal countries of the OECD and a small number of the developing countries. (See Table 10 and Appendix I, Table 27.) Two observations stand out. The average central government employee is almost uniformly better paid than the average state or local government employee. However, this fact may simply reflect differences in the sectoral or occupational structure of employment at the different levels of government rather than absolute levels of pay. Second, although the average salary per employee in the nonfinancial public enterprise sector is generally higher than that paid in the central government, the data suggest some notable exceptions to this rule (for example, Benin, Canada, India, Italy, and Korea).

Salary-Scale Index for Specific Jobs

Another measure of the wage and salary structure was calculated using the starting salary of different types of employees commonly found in the government sector. These jobs included primary school and secondary school teachers, certified nurse, doctor, police sergeant, police corporal, police constable, engineer, mechanic, road inspector, agricultural officer, agricultural assistant, animal health officer, animal health assistant, meat inspector, and clerical officer. To give some sense of relative salaries, all salaries were compared with that of a clerical officer (whose starting salary took on an index value of 100). (See Appendix I, Table 29.) The variance in these indices *across positions* for a particular country was calculated as a measure of the wage spread. The mean value of the index for any given job *across countries* was estimated to give some sense of a norm salary structure. Both summary measures are presented in Table 11.

Several observations can be made. First, while it would be unreasonable to assume that every country adopts the same differential between positions, the scale of many of the differences is striking. For example, a starting primary school teacher in Cyprus appears to make 48 percent of a clerical officer's salary, while in New Zealand, 414 percent; for a secondary school teacher the range is from 56 percent in Cyprus to 461 percent in New Zealand. This contrasts with a mean for the 24 countries in the sample of 154 for primary school teachers and 208 for secondary school teachers. (See Table 11.) It is also interesting that most OECD countries pay their teachers below the mean, whereas many of the developing countries pay above.

Second, for some of the more specialized positions, such as doctors and engineers, the cross-country variance is even wider. For example, in Sweden, a doctor makes 154 percent of the salary of a clerical officer but in Bahrain, only 115 percent. In some Caribbean countries (e.g., Trinidad and Tobago) a doctor appears to be paid 10 times that of a clerical officer, in St. Lucia, 4.5 times. In some of the developed countries, one finds equally large differentials: in the United States the ratio is 3.7, in New Zealand, 6.3. Similarly, for a position such as an engineer, there is considerable variation, ranging from 1.5 times in Singapore to more than 6 times in Trinidad and Tobago, and to 4.8 times in India, New Zealand, and St. Lucia.

[29] Power and prestige are also important, not to mention other unmeasured fringe benefits.

Table 10. Intergovernmental Wage Differentials: Means and Standard Deviations[1]

		OECD Industrial Countries	Developing Countries			
			Total sample of countries	Africa	Asia	Latin America
Ratio of average state and local government wage to the average central government wage	($\bar{x}$)	0.85	0.50	. .	. . .	0.60
	(s)	(0.22)	(0.46)	. . .	. . .	(0.44)
	(n)	10	10	3	1	4
Ratio of average nonfinancial public enterprise wage to average central government wage	($\bar{x}$)	1.08	0.96	0.89	. . .	. . .
	(s)	(0.35)	(0.35)	(0.38)	. . .	. . .
	(n)	6	10	5	2	3

Source: Table 27.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.

It is also interesting to note the wide variation in the relative salaries of positions in the *same* sector, for example, between primary school and secondary school teachers. In some countries, such as El Salvador, Guatemala, Cyprus, Denmark, and Sweden, the differential is small—zero to 12 percent. Yet, in other countries such as India or the United Kingdom, the differential is closer to 50 or 60 percent; in some countries, such as Kenya, a secondary school teacher appears to be paid a salary almost three times as large as a primary school teacher. Similarly, if one contrasts the salary of a certified nurse with that of a doctor, one can find that the ratios differ by as low as 15 percent in Bahrain to as high as 50 to 70 percent in Sweden or Cyprus or one that is three to six times as large, as in Trinidad and Tobago or Kenya. Countries that have the highest relative payment to doctors (Trinidad and Tobago and New Zealand) also have the highest payment to nurses, and it usually follows that those countries with lower payments to doctors also have lower payments to nurses.

In looking at the police force, it is not obvious why the starting salary of a police officer on the beat in the District of Columbia in the United States or in Trinidad and Tobago should be double the salary of a clerical officer. At the same time, in some countries, the police force is paid salaries equivalent to or close to that of a clerical officer, for example, in Belgium, Cyprus, Guatemala, and Singapore.

As might be expected, countries with major dependence upon agriculture tend to reward their agricultural officers more generously than others; the country with the highest multiple, Kenya, pays its agriculture officers 5.3 times more than its clerical officers, while New Zealand pays 4.9 times more. On the other hand, countries such as El Salvador, the Bahamas, Cyprus, and Canada pay their agricultural officers a relatively small multiple of their clerical officer's wage.

Across positions *within* countries, the variance also can be quite extreme. In Kenya, the standard deviation of the index is 208 relative to a mean index for a clerical officer of 100. In Trinidad and Tobago, the standard deviation reaches 247. In other countries, the salary spread is clearly quite tight: in Sweden and Denmark, the standard deviation is only 18 and 38, respectively.

Distribution of Employees Across Salary Ranges

For 14 countries, it also proved possible to estimate the frequency distribution of government employees by salary range. This allows the calculation of a "Lorenz" curve on the government salary structure of a given country, viz., a cumulative distribution of the number of employees at different salary levels and the cumulative level of total salaries paid to employees below a given salary level. Table 12 provides summary statistics drawn from these estimates; Chart 1 illustrates the distributions of four countries; and Charts 2–5 (in Appendix I) illustrate the salary distribution in all the countries for which there were data.

There are significant variations in the degree of equality in the overall salary structure. Countries such as Korea, New Zealand, Sweden, and the United Kingdom indicate a relatively high degree of equality. Others such as Guatemala, Kenya, and Senegal have relatively unequal salary structures. At the same time, the United Kingdom has the largest number of employees in the lower ranges but one of the more equal distributions; in this case it seems, rank may speak louder than salary. In Kenya, the top 10 percent earn 26 percent of the pay

Table 11. Measures of the Structure of Salaries by Occupation

A. Mean Starting Salary of Public Sector Employees Relative to that of a Clerical Worker (Clerical officer = 100)

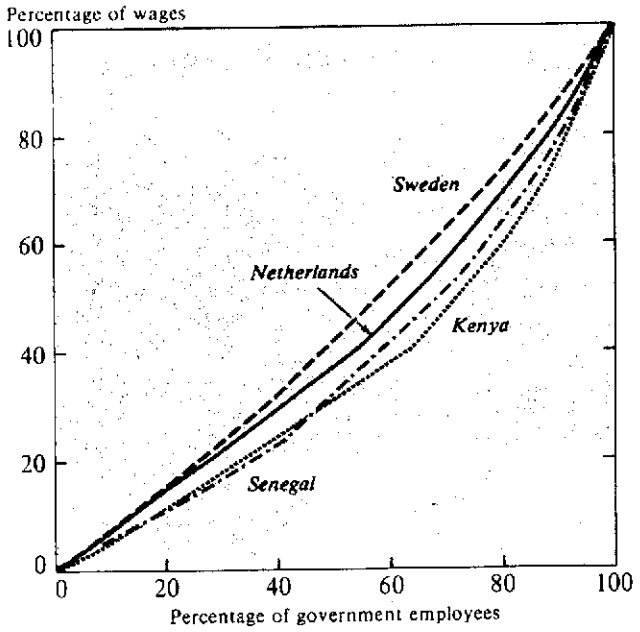
Primary school teacher	154	Mechanic	122
Secondary school teacher	208	Road inspector	154
Certified nurse	159	Agricultural officer	263
Doctor	376	Agricultural assistant	142
Police sergeant	164	Animal health officer	284
Police corporal	142	Animal health assistant	129
Police constable	106	Meat inspector	172
Engineer	301	Clerical officer	100

B. Standard Deviation Across Occupational Positions Within a Given Country

United Kingdom	103	Kenya	208	Bahrain	66
United States	88	Seychelles	126		
Canada	45	Swaziland	120	Bahamas	65
Australia	29	Togo	78	El Salvador	79
New Zealand	165	Uganda	123	Guatemala	64
Belgium	59	Zambia	69	Jamaica	58
Denmark	38			Panama	132
Sweden	18	India	126	St. Lucia	135
Norway	20	Singapore	47	Trinidad and Tobago	247
		Cyprus	42		

Source: Table 29.

Chart 1. The Netherlands, Sweden, Kenya, and Senegal: Lorenz Curve of Government Salary Structure



packet so that, in contrast to the United Kingdom, to be important in Kenya rank appears to require a pay differential. Korea is another country with an unusual distribution: the top 10 percent of the government work force earn only 13 percent of the total salary bill. In general, it can be seen that most of the more developed countries group their employment slightly more in the fourth and fifth divisions than do the developing countries, and, similarly, developing countries tend to skew their employment more into the second division of the salary range.

The degree of inequality will have a bearing on the impact of certain policy measures aimed at controlling expenditures, such as a general or selective freeze on vacancies. The greater the degree of inequality, the greater the necessity that the job freeze cover employees at the upper end of the salary range. Otherwise, the fiscal impact of the freeze may not be significant. In some countries, this may pose significant problems, particularly if the government has difficulties in recruiting higher-level civil servants.

There is no obvious relationship between the degree of inequality and the preferential wage salary status of government employees as proxied by the multiple of average central government salaries to per capita income. The OECD countries appear to have both a high degree of equality and a low multiple. Among the non-oil developing countries there is considerable variation; Kenya and Senegal appear to have a high degree of inequality and a high multiple; Korea has a high degree of equality in its salary structure, yet its public servants are well paid relative to the per capita income level; Guatemala has a high degree of inequality in its salary structure, but its employees do not appear well paid vis-à-vis other components of its labor force.

Table 12. Degree of Inequality in Distribution of Salaries

(In percent)

	Percentage of Salaries Received by the			Ratio of Average Central Government Wage to GDP Per Capita
	Bottom 70 percent of employees	Top 20 percent of employees	Top 10 percent of employees	
Belgium	54	34	20	1.66
Canada	55	34	19	1.51
New Zealand	57	31	17	1.59
Netherlands	56	32	19	2.28
Sweden	61	27	14	1.49
United Kingdom	57	30	15	1.60
Kenya	47	41	26	4.44
Senegal	51	37	22	9.90
Swaziland	52	37	24	...
Korea	...	...	13	4.76
Sri Lanka	54	34	22	1.77
Guatemala	48	44	29	2.73
Panama	53	36	21	3.04
El Salvador	57	32	19	4.61
Average	54	35	20	3.14

VII Employment and Wages in Functional Categories

In considering the size of government employment in a country, it is useful to examine the functional structure of that employment to evaluate whether certain sectors seem large or small relative to those in other countries. One approach is to compare the number of employees in a particular sector as a proportion of population; another is to examine the share of total government employment in a given functional sector.

Three key problems arise in making such comparisons. First, since some countries delegate much of the administrative, education, health, and police functions to governmental units below the central government, the employees in a given functional sector would have to be aggregated across all levels of government. In practice, the absence of state and local employment data on a functional basis in many countries, particularly developing countries, virtually precludes such an analysis. It is possible, however, to make estimates of state and local government employment in three sectors: health, education, and police, and the central government employment statistics used for the analysis in this section of the study have been adjusted to include such employees. This adjustment ensures that the degree of federalism does not significantly distort cross-country comparisons on the relevance of these functions.[30] The adjustments were made primarily for some of the more federal countries in the OECD region but also for some developing countries as well.[31]

Second, governments may achieve given functional objectives through various means, including direct employment contracting with outside consultants, and through government subsidies to private sector institutions. In the United States and the Netherlands, the government finances a significant amount of health services through various social insurance schemes, yet most of the employees are employed by nongovernmental institutions. Such employees would not be included in these employment statistics; thus, in this case, caution is required in comparing the number of health employees per capita.

Third, in some countries, the postal function is included at the central government level, while in many others, the postal service is a parastatal or public corporation. The study uses the definition applied by the individual country.

Tables 30 and 31 in Appendix I provide the basic statistical tables on central government employment by functional sector, both in terms of number of employees per 100 inhabitants and as a share of total adjusted central government employment. Tables 13 and 14 provide the regional means of these statistics. Given comparable data on total wages and salaries paid to the employees in a given functional sector, it is also possible to estimate the average wage per employee in a given functional sector. Expressed as a multiple of the average central government wage (set equal to 100), the individual country statistics are provided in Appendix I, Table 32 and the regional means in Table 15.

Administration

Administration is often viewed as one of the major overheads of central government. The mean number of administrators per 100 inhabitants for OECD countries (0.30) and developing countries (0.29) is remarkably similar (Table 13). Typically, African countries appear to have the highest burden of administrative costs (0.29 per 100 inhabitants) and Asian countries the lowest (0.14).

Within the OECD, for the countries for which data are available, apparently the countries with the largest administrative sector are Sweden, New Zealand, Iceland, and Ireland. Indeed, 8.75 percent of the total adjusted central government employment in Ireland is represented by administration.

A characteristic of the international comparison of government employment in administration is that those countries that have been more influenced by the British Commonwealth system of government record higher proportions of central government civil servants in

[30] This treatment suggests, of course, that there remains some significant downward bias in some of the other functional employment shares, particularly with respect to public administration.

[31] Argentina, Australia, Brazil, Canada, Denmark, the Federal Republic of Germany, India, Ireland, Japan, Korea, the Netherlands, New Zealand, Sweden, the United Kingdom, and the United States.

Table 13. Average Number of Adjusted Central Government Employees per 100 Inhabitants, by Functional Sector and Region: Means and Standard Deviations[1]

			Developing Countries			
		OECD Industrial Countries	Total sample of countries	Africa	Asia	Latin America
Administration:	($\bar{x}$)	0.25	0.29	0.29	0.14	0.22
	(s)	(0.15)	(0.32)	(0.25)	(0.07)	(0.16)
	(n)	11	27	12	4	9
Education:	($\bar{x}$)	2.02	0.79	0.50	0.69	1.06
	(s)	(0.72)	(0.49)	(0.34)	(0.18)	(0.55)
	(n)	10	30	12	5	10
Health:	($\bar{x}$)	1.41	0.36	0.23	0.29	0.45
	(s)	(1.94)	(0.31)	(0.22)	(0.28)	(0.28)
	(n)	10	28	12	4	9
Defense:	($\bar{x}$)	0.63	0.63	0.27	1.20	0.35
	(s)	(0.33)	(0.78)	(0.18)	(1.20)	(0.34)
	(n)	15	26	11	4	7
Police:	($\bar{x}$)	0.34	0.31	0.22	0.29	0.37
	(s)	(0.09)	(0.20)	(0.13)	(0.20)	(0.22)
	(n)	10	24	10	4	9
Finance and planning:	($\bar{x}$)	0.13	0.10	0.08	...	0.11
	(s)	(0.14)	(0.08)	(0.07)	...	(0.07)
	(n)	9	26	11	3	9
Agriculture:	($\bar{x}$)	0.13	0.16	0.19	0.05	0.17
	(s)	(0.14)	(0.17)	(0.23)	(0.05)	(0.13)
	(n)	10	28	12	4	9
Manufacturing, mining, and construction:	($\bar{x}$)	0.11	0.12	0.14	...	0.12
	(s)	(0.16)	(0.16)	(0.21)	(...)	(0.10)
	(n)	9	27	12	3	9
Utilities:	($\bar{x}$)	0.08	0.09	0.05	0.04	...
	(s)	(0.12)	(0.16)	(0.04)	(0.05)	(...)
	(n)	4	16	6	4	3
Transport and communications:	($\bar{x}$)	0.21	0.12	0.06	0.15	0.15
	(s)	(0.33)	(0.13)	(0.07)	(0.14)	(0.16)
	(n)	11	24	9	4	8
Postal:	($\bar{x}$)	0.27	0.09	...	...	0.13
	(s)	(0.31)	(0.07)	(...)	(...)	(0.08)
	(n)	5	15	4	3	5
Labor and social security:	($\bar{x}$)	0.10	0.05	0.02	...	0.06
	(s)	(0.09)	(0.04)	(0.03)	(...)	(0.04)
	(n)	11	23	9	3	8
Other:	($\bar{x}$)	0.12	0.15	0.11	0.08	0.08
	(s)	(0.12)	(0.25)	(0.26)	(0.08)	(0.06)
	(n)	9	26	11	4	8

Source: Table 30.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.

administration than do other countries; for instance, Kenya (28.8 percent of central government civil servants in administration), South Africa (19.4 percent), Zimbabwe (14.4 percent), the Bahamas (10.7 percent), and Jamaica (11.6 percent). This might be explained by the fact that the generalist tradition in the British Commonwealth leads many jobs to be classified as administrative that in other countries would be thought of as specialized.

Those employed in the administrative sector of government appear to be paid rather more than the average for the public service as a whole. In OECD countries this ranges from a differential as low as 1 percent in Canada to 41 percent in the United States. What is noticeable is that relative payment to administrative officers in developing countries appears to be higher than in the OECD countries across a wide range of African, Asian, and Latin American countries. It might be questioned whether the elitism suggested by these figures is matched by the (of course, difficult to judge) output.

Education and Health

The proportion of adjusted central government employees involved in education is dramatically higher in the OECD countries than in developing countries; the mean for the OECD is 38.8 percent, compared with 28.5 percent in the developing countries. The country with the highest commitment in terms of the share of employees allocated to education appears to be Belgium (58 percent) and the lowest in OECD European countries, Denmark (21 percent). In developing countries, the figures for Asia and Latin America tend to be higher than those for Africa, and again encompass wide variations, for example, 36 percent of the adjusted central government personnel in Kenya are employed in education but only 12 percent in Zimbabwe. Argentina devotes almost 50 percent of its central government employment to education.

The number of employees per capita in the education sector of the OECD countries is almost three times that in the developing countries; for health, the ratio is four times larger in the OECD region. For both sectors, employment is considerably higher on a per capita basis in the Latin American region than in Africa or Asia.

Where there are extraordinarily low figures for public health employment, they may represent other quasi-official ways of providing health care outside the budget payroll, for example, through insurance (Australia) or lotteries (Ireland). Employment in the health sector in OECD countries averages 19 percent of total adjusted central government employment, compared with 12 percent for the developing countries. The highest public personnel commitment to health is found in Sweden (46 percent) and Iceland (44 percent).

There is considerable variance in the health employment statistics, owing almost wholly to the institutional issue discussed above. In the OECD region, health employment per capita ranges from less than one employee per 1,000 inhabitants in Ireland and the

Table 14. Average Share of Adjusted Central Government Employment in a Functional Sector, by Region: Means and Standard Deviations[1,2]

(In percent)

		OECD Industrial Countries	Developing Countries			
			Total sample of countries	Africa	Asia	Latin America
Administration:	$(\bar{x})$	4.4	11.0	14.2	5.4	7.1
	(s)	(2.6)	(8.9)	(9.1)	(2.6)	(3.3)
Education:	$(\bar{x})$	38.9	28.5	24.7	28.2	34.6
	(s)	(10.3)	(9.2)	(8.0)	(9.1)	(10.1)
Health:	$(\bar{x})$	18.1	12.2	10.8	8.8	14.2
	(s)	(18.4)	(4.4)	(2.9)	(5.9)	(4.3)
Defense:	$(\bar{x})$	14.9	21.3	16.8	30.3	10.1
	(s)	(9.4)	(19.6)	(6.5)	(24.6)	(7.6)
Police:	$(\bar{x})$	7.2	11.7	11.8	8.8	12.1
	(s)	(3.7)	(4.4)	(4.1)	(3.2)	(4.8)
Finance and planning:	$(\bar{x})$	3.0	3.7	4.0	. . .	3.9
	(s)	(2.7)	(2.1)	(2.3)	(. . .)	(1.8)
Agriculture:	$(\bar{x})$	2.2	6.2	8.3	1.6	6.5
	(s)	(2.2)	(5.0)	(4.2)	(1.9)	(6.0)
Manufacturing, mining, and construction:	$(\bar{x})$	1.4	4.3	5.2	. . .	4.2
	(s)	(1.4)	(3.7)	(4.6)	(. . .)	(2.8)
Utilities:	$(\bar{x})$	. . .	2.6	3.5	0.9	. . .
	(s)	(. . .)	(3.2)	(3.1)	(1.0)	(. . .)
Transport and communications:	$(\bar{x})$	2.9	4.8	3.1	8.2	5.5
	(s)	(2.6)	(6.2)	(3.6)	(11.1)	(6.8)
Postal:	$(\bar{x})$	7.6	3.0	1.6	. . .	3.8
	(s)	(8.2)	(2.6)	(1.5)	(. . .)	(2.0)
Labor and social security:	$(\bar{x})$	1.8	1.7	1.1	. . .	2.6
	(s)	(1.6)	(1.6)	(0.6)	(. . .)	(2.4)
Other:	$(\bar{x})$	2.0	4.7	5.3	2.6	2.4
	(s)	(2.0)	(7.1)	(9.8)	(2.7)	(1.8)

Source: Table 31.

[1]The functional shares in a region may not add to 100 because there may be differences in the number of countries for which data are available in a given category.

[2]$\bar{x}$ = mean; s = standard deviation. The number of observations in the sample are indicated in Table 13.

Table 15. Indices of Mean Salaries by Functional Sector Relative to Average Central Government Wage: Means and Standard Deviations[1]

(Average wage = 100)

		OECD Industrial Countries	Developing Countries: Total sample of countries	Developing Countries: Africa	Developing Countries: Latin America
Administration:	($\bar{x}$)	117	129	125	124
	(s)	(21)	(40)	(51)	(24)
	(n)	5	22	9	5
Education:	($\bar{x}$)	111	113	113	100
	(s)	(15)	(37)	(32)	(19)
	(n)	5	23	9	8
Health:	($\bar{x}$)	152	92	96	89
	(s)	(119)	(31)	(32)	(12)
	(n)	6	23	9	8
Defense:	($\bar{x}$)	96	99	94	115
	(s)	(15)	(38)	(52)	(15)
	(n)	4	16	7	5
Police:	($\bar{x}$)	115	94	90	85
	(s)	(31)	(27)	(25)	(18)
	(n)	4	21	9	8
Finance and planning:	($\bar{x}$)	129	141	134	126
	(s)	(53)	(72)	(56)	(54)
	(n)	4	22	8	8
Agriculture:	($\bar{x}$)	112	99	105	90
	(s)	(19)	(42)	(56)	(37)
	(n)	5	23	9	8
Mining, manufacturing, and construction:	($\bar{x}$)	112	96	95	90
	(s)	(14)	(35)	(32)	(37)
	(n)	5	22	9	8
Utilities:	($\bar{x}$)	...	143	91	...
	(s)	(...)	(104)	(79)	(...)
	(n)	3	14	6	3
Transport and communications:	($\bar{x}$)	107	89	73	86
	(s)	(39)	(40)	(55)	(22)
	(n)	5	21	7	8
Labor and social security:	($\bar{x}$)	88	101	117	87
	(s)	(34)	(38)	(52)	(22)
	(n)	5	20	7	7
Other:	($\bar{x}$)	115	118	133	134
	(s)	(8)	(64)	(74)	(63)
	(n)	4	21	8	7

Source: Table 32.
[1] $\bar{x}$ = mean; s = standard deviation; n = number of observations in the sample.

Netherlands, to 53 and 42 employees per 1,000 inhabitants in Denmark and Sweden, respectively. Yet the difference in employment in the total health sector of these countries is far less marked.

Payments to those employed in public sector education appear near the average for the OECD countries, but it is striking how payments to educators in the public service in Africa and Asia are markedly above the average, for example, Zambia (146), Korea (222), and Sri Lanka (148). In Latin American countries, the range is closer to that in Europe. These figures conceal the actual responsibility for paying the salaries of teachers or health workers. In some countries, especially those associated with the French system of government, teachers are hired, fired, and paid by the central government. In other countries (e.g., the United States, the United Kingdom, and Kenya), the teachers are employed by local authorities.

On the whole, public administration theory would support the idea of local influence over the provision of locally concerned public services; in practice, as local authorities usually rely on the central government for substantial transfers of revenue, their ability (even where they have the authority) to determine their own salary scales and hiring practices is limited. The outcome is often the worst of both worlds with localities telling teachers how they would like to pay more but how they are frustrated by their central government's constraints.

while the central government talks about the irresponsibility of local authorities and their poor appreciation of the requirements of broader national macroeconomic policy. No matter how the supposed responsibility for education and health wage decisions is allocated, the public sector commitment to education and health can be crucial for setting wage patterns, particularly differentials, in the urban labor market. Indeed, in 1982 the British Government fought the longest strike in the history of U.K. public sector labor relations over the pay of workers in the state health service precisely because it considered it had to hold down wage awards to contain inflation.

Defense and Police

Defense and police forces should probably be taken together, as the distinction between the two in a cross-country comparison is likely to be of questionable validity.[32] The share of government employment in both defense and police is higher for the developing countries than for OECD countries. In the former, 21 percent of the central government labor force is likely to be committed to defense and 12 percent to police, whereas the similar figures for OECD countries are 15 percent and 7 percent, respectively. The country with the highest percentage of its population committed to defense in the OECD countries is the United States (1.4 defense personnel per 100 inhabitants and 0.4 police). The country with the highest defense and police commitment is Cyprus (2.8 defense personnel per 100 population and 0.6 police).

Initially, it appears that there is little difference between the number of defense employees per capita in the OECD and developing countries. However, if one adjusts for the effects of Singapore, Korea, and Cyprus, the contrast between the developed and the developing countries in the number of defense employees per capita becomes clearer, with the developing countries employing twice as many defense personnel per capita. The variance in the number of defense personnel in those countries is quite stark. One wonders why Swaziland requires 6.9 military per 1,000 inhabitants and Kenya only 0.8 (when their police forces are comparable). In contrast, the number of police per capita does not appear comparable in the developing countries and in the OECD region. Latin American countries appear to employ more police than do countries in Asia and Africa. The variance among OECD countries in the number of police is quite small.

For the countries for which defense data are available, there is no systematic pattern that defense employees are paid markedly lower salaries than those in the other functional sectors. This finding may simply reflect the weight of civilian employees in the defense sector, but only in part. Examining specific countries, defense forces in some OECD countries appear to be paid substantially below the norm (e.g., Japan, 81 percent), while some developing countries pay their defense forces substantially higher amounts than the average for the public service as a whole; for example, Kenya, 130 percent, Zambia, 134 percent, and Argentina, 140 percent.

If defense forces should be considered in conjunction with the police force, then, on average, the police and defense forces receive comparable pay in the sample of developing countries; in the OECD, police are better paid, although this fact probably reflects the effect of lower salaries for draftees in the defense forces of OECD countries. In many developing countries, the police forces appear to have an average wage that is much lower than the average wage of the military, for instance, in Sri Lanka, Argentina, the Bahamas, Ecuador, Zambia, and Jamaica. However, there are examples of the opposite relationship, notably in Swaziland and Korea. It is difficult to appreciate why the pay of the police force should be markedly different from that of the military; many of the duties appear comparable and while some of the skills needed by the military may justify higher pay (for example, pilots), the day-to-day duties and responsibilities of police work might seem to justify a somewhat higher rate of pay in general.

Other Sectors

In terms of the number of employees per capita in finance and planning, there is almost no difference between developed and developing countries. There does not appear to be much difference in the mean number of employees in agriculture per capita between developed and developing countries, but again there is a wide variation between regions, with the mean for Africa being approximately 0.19 per 100 inhabitants, the mean for Asia 0.05, and that for Latin America 0.17. The ratios of central government employees in mining, manufacturing, and commerce or in transportation and communication do not reveal many significant differences between developed and developing countries. There is, however, as might be expected, a significantly

[32] Statistics on the numbers of military personnel are often unavailable from country sources. Reliance was placed on estimates of the United States Arms Control and Disarmament Agency (1982).

higher number of central government employees in the area of labor and social security in the OECD region.

Finally, a much higher fraction of central government employees in the developing countries are engaged in economic services, finance and planning, agriculture, mining and manufacturing, and transport and communications. Approximately 19 percent of employees in the central government are in these sectors in developing countries, as opposed to approximately 9 percent in the OECD countries.

VIII Possible Policy Applications: Calculation of Intercountry Indices for Analyzing the Level and Structure of Government Employment and Wages

Employment: By Level of Government

Section IV presents an econometric analysis of the determinants of government employment. The estimated equations can be used to calculate an International Government Employment Index (hereinafter referred to as the IGEM index), which would indicate whether a country employs more or fewer employees than one would have predicted, given its per capita income, population, type of economic system, and the patterns observed in other countries. It must be emphasized that these indices are likely to be strongly influenced by the quality of the data and the limited number of observations in the sample.

Table 16 indicates two results for each employment measure: the predicted absolute level of employment and, for countries where actual employment data are available, the IGEM index, which equals the ratio of *actual* employment to the *predicted* level (multiplied by 100).[33] The former number allows a country to determine how its employment compares with what was predicted.

The IGEM indices for general government employment for the OECD countries range from 61 to 189 percent. Some countries, for example, Belgium, Ireland, and Italy, appear to employ in general government just the number that would have been predicted, although, again, this says nothing about whether the government revenue of any of these countries is sufficient to afford this level of employment. Some are considerably higher, notably the Scandinavian countries, the United Kingdom, Australia, and New Zealand. Among African countries, Uganda, Swaziland, Kenya, and Mauritius appear to have considerably more government employees than would have been predicted. Others, such as Cameroon, Burundi, Madagascar, and Senegal, appear to have lower than predicted levels.

The policy implications of such results cannot and should not be drawn without analyzing many other factors, such as wage rate policy or the allocation of particular functions as between the public and private sectors. For example, a lower than predicted government employment level in a country does not argue, prima facie, for expanded employment in the absence of other policy measures or further policy analyses. Senegal and Burundi are obvious examples. Their employment indices of 50 and 42, respectively, suggest a general government sector that is lower, in employment terms, than would have been expected. Yet, in another study by the authors, estimates of the predicted versus actual share of total central government wage and salary expenditure in GDP in Senegal suggested that it was spending *more* than would have been expected on such wages and salaries.[34] One possible source of reconciliation of these two results could derive from the levels of Senegal's central government wage rates, as shown in Appendix I, Table 27. The ratio of the average central government wage to per capita income in both Senegal and Burundi is higher than for *any* other country in this sample. Clearly, this ratio suggests high wages and low levels of employment, although these results do not themselves suggest the desired level of remuneration or employment.

However, there is one additional cautionary note. The interesting analogue to the Senegal and Burundi cases is Japan, which *also* has a lower than expected employment level and a higher than expected average central government wage rate relative to per capita income. Are its wages excessive and its employment in the government too low? Is it a matter of productivity? Is one paying for a highly productive, elite corps of civil servants through a high wage rate incentive? Or, is one paying an economic rent to those civil servants lucky enough to get public employment but whose productivity does not warrant high wage rates? Do other factors contribute to the observed indices, such as the significance of an expatriate labor force in the government civil service? The IGEM indices only suggest the *existence* of an imbalance

[33] In those few cases where the denominator of the ratio—the predicted level—is very small or negative, the index is assumed to equal 400.

[34] See Tait and Heller (1982).

Table 16. IGEM Indices and Predicted Level of Government Employment: By Level of Government

(Predicted employment in thousands of employees)

Country	Year	Central Government		General Government		Public Sector	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Australia	1980	63	481	152	948	125	1,283
Austria	1979	104	277	122	495	...	656
Belgium	1980	135	358	98	680	96	902
Canada	1981	47	759	90	1,670	83	2,273
Denmark	1981	73	179	168	346	147	436
Finland	1979	..	168	120	321	..	404
France	1980	..	1,410	86	3,572	..	4,994
Germany, Fed. Rep. of	1980	50	1,607	88	4,220	80	5,898
Iceland	1980	95	13	90	16	90	19
Ireland	1978	67	114	97	154	107	208
Italy	1980	140	1,206	102	2,995	81	4,326
Japan	1980	51	2,389	61	7,207	50	10,395
Luxembourg	1979	...	21	61	28	...	34
Netherlands	1980	82	429	77	1,002	63	1,292
New Zealand	1981	171	124	139	188	131	245
Norway	1979	83	156	117	305	...	378
Spain	1979	...	828	81	1,839	...	2,646
Sweden	1979	73	291	189	643	167	807
Switzerland	1979	...	265	59	509	...	655
United Kingdom	1980	198	1,173	148	3,620	151	4,908
United States	1981	106	3,995	121	14,591	86	21,331
Benin	1979	45	56	52	57	62	83
Botswana	1979	76	24	121	20	...	28
Burundi	1978	20	88	42	51	42	83
Cameroon	1981	34	166	30	190	...	291
Central African Rep.	1979	...	52	...	36	...	55
Congo	1978	115	33	...	35	...	49
Ethiopia	1977	...	218	...	319	...	527
Ghana	1979	...	140	...	277	...	415
Kenya	1980	128	270	125	292	99	470
Liberia	1982	97	51	113	44	86	65
Madagascar	1980	...	130	65	143	59	221
Malawi	1979	...	116	...	83	...	133
Mauritius	1980	177	28	221	25	215	35
Morocco	1979	...	214	...	462	...	720
Senegal	1976	52	88	50	92	46	139
Sierra Leone	1979	...	75	...	54	...	84
South Africa	1982	42	482	24	1,138	...	1,649
Sudan	1978	...	219	87	322	...	498
Swaziland	1982	99	19	120	15	94	21
Tanzania	1978	139	179	92	272	100	423
Togo	1980	77	52	83	48	...	71
Tunisia	1978	...	96	...	166	...	237
Uganda	1982	64	213	149	129	121	224
Zaire	1978	...	324	...	361	...	601
Zambia	1980	143	101	114	133	142	194
Zimbabwe	1979	84	126	90	141	...	214
Korea	1981	197	517	154	761	113	1,236
Malaysia	1980	...	240	...	404	...	602
Pakistan	1979	...	639	...	1,123	...	1,913
Philippines	1979	133	599	100	959	130	1,558
Singapore	1981	145	89	98	131	...	169
Sri Lanka	1980	166	241	208	214	342	352
Thailand	1979	...	591	148	923	...	1,505
Cyprus	1980	76	27	75	28	...	36
Greece	1978	...	252	...	399	...	564
Portugal	1977	...	163	80	318	...	449
Turkey	1979	...	363	...	1,278	...	1,948
Bahrain	1980	117	19	87	26	...	31
Egypt	1979	150	382	217	757	185	1,200
Israel	1979	...	108	...	170	...	225
Jordan	1979	...	73	...	74	...	109
Oman	1980	104	37	74	52	...	64
Argentina	1981	125	458	121	1,053	104	1,523
Bahamas	1978	98	11	98	11	91	14
Barbados	1981	...	12	226	12	...	15
Belize	1981	69	5	...	—	...	1
Brazil	1979	...	164	...	3,201	...	5,061
Chile	1979	...	224	...	355	...	522
Colombia	1980	...	304	...	720	...	1,116
Costa Rica	1978	...	63	...	70	...	98

Table 16 (concluded). IGEM Indices and Predicted Level of Government Employment: By Level of Government

(Predicted employment in thousands of employees)

Country	Year	Central Government		General Government		Public Sector	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Ecuador	1980	98	166	. . .	245	. . .	362
El Salvador	1982	107	104	. . .	109	. . .	165
Guatemala	1981	77	137	64	194	45	290
Guyana	1979	. . .	21	. . .	20	. . .	28
Honduras	1981	38	70	. . .	86	. . .	124
Jamaica	1980	124	51	162	66	. . .	90
Mexico	1979	. . .	576	. . .	2,278	. . .	3,458
Nicaragua	1976	. . .	53	. . .	55	. . .	81
Panama	1979	121	52	118	61	132	84
St. Lucia	1981	106	4	129	4	. . .	5
Trinidad and Tobago	1980	. . .	50	. . .	65	. . .	83
Uruguay	1979	. . .	77	. . .	111	. . .	149

and provoke the obvious questions. The sources and significance of imbalances can be determined only through more detailed analyses of a country's particular situation.

Another illustration of this can be seen in the indices for Asia. In this region, most countries tend to employ more civil servants than would have been predicted; none employs less. Yet in the Tait-Heller (1982) study, almost all these countries appear to spend, in aggregate terms, less than would have been predicted on aggregate wages and salaries. Relative to per capita income, the average central government wage of Asian public employees is less than half that in African countries, although still higher than most of the OECD countries. Should there be a cutback in employment and an increase in salaries?

Employment: By Function

Analysts of public employment in a country are often confronted by the need to evaluate not only the size of the government sector but also the sectors where public employment should be frozen or even cut back. There is no substitute for a detailed analysis of the efficacy of programs within a sector as a basis for such an evaluation. As an input to such analyses, cross-country comparisons may serve a useful role. Using a model analogous to the one used in Section IV to predict total government employment, it is possible to examine the aggregate determinants of functional employment in the central government on a per capita basis.[35] As mentioned earlier, the employment variables are assumed to be a function of (1) per capita income, (2) population, and (3) the type of economic system. The econometric results are indicated in Table 17.

Several facets of the results should be noted. First, the level of development as proxied by per capita income proves a significant positive determinant of employment per capita in some key sectors—notably, education, health, police, finance and planning, and labor and social security. Interestingly, defense employment per capita declines at higher per capita income levels. Other sectors, such as administration, mining, manufacturing, and construction, prove insensitive to the level of development. Second, certain sectors appear to receive less public employment on a per capita basis in the countries with higher populations, notably in agriculture, administration, police, finance and planning, mining, manufacturing and construction, and utilities. With the exception of police, this negative relationship may reflect the relatively greater importance of the state and local government sectors in providing services in these sectors. Finally, the type of economic system does not prove very important as a determinant of the magnitude of sectoral employment. Only adjusted central government employment per capita in the health sector appears to be correlated directly with the degree of central planning in the economy.

The preceding equations may be used to predict the level of sectoral employment in a given country, given its per capita income, population, and type of economic system. This also requires the strong assumption that it follows the pattern of experience of other countries with like characteristics and subject to the important caveat that the statistical significance of these results is not as robust as in the equations estimating aggregate government employment. As above, both the IGEM index—the ratio of the actual employment in a sector to the predicted level—and the absolute number of employees that one would have predicted for a sector have been indicated. (See Appendix I, Table 33.) Again, these results should *not* be construed as norms but can serve only as a starting place for further inquiries as to why a government's employment in a sector is high or low.

An Approach for Analyzing the Level of Government Salaries

Section V presented the results of an econometric analysis explaining the ratio of the average central government wage to GDP per capita. As before, the estimating equation may be used to predict the average central government salary level that would be compatible

[35]The central government employment numbers have again been adjusted to take account of the importance of education, health, and police functions in governmental units below the central government level. See Section VII.

with a country's per capita income, and size of government sector, given the patterns established by other countries. As above, one could then compare the predicted salary with the actual salary prevailing at that time and estimate the extent to which the salary was above or below the anticipated level in the year of this observation. An index value, equaling the ratio of actual to predicted salary, has been calculated and is indicated in column 2 of Table 18, along with the predicted salary for that year in U.S. dollars. The exchange rates prevailing in that year have been used. The degree to which a country's currency was particularly strong or weak at that time will obviously affect the relative salary of a country's civil servants vis-a-vis others.

Table 17. Determinants of Functional Employment Per Capita

(t-statistics in parentheses)

Independent Variables / Dependent Variables[1]	Inverse of Per Capita Income[2]	Logarithm of Per Capita Income[2]	Logarithm of Population[3]	Economic System	Constant	R^2 (n)[4]
Administration		0.25 (0.08)	−0.06 (−2.60)	0.01 (0.13)	0.82 (3.22)	0.20 (37)
Education		0.41 (6.82)	0.01 (0.14)	0.09 (1.01)	0.67 (1.44)	0.58 (39)
Health		0.34 (2.86)	−0.06 (−0.66)	0.24 (1.41)	0.51 (0.56)	0.26 (37)
Police		0.06 (2.92)	−0.02 (−1.59)	−0.02 (−0.62)	0.51 (3.49)	0.28 (33)
Defense	−0.09 (−1.70)		— (0.05)	0.03 (0.32)	0.76 (2.92)	0.11 (41)
Finance and planning		0.03 (2.37)	−0.02 (−2.71)	— (−0.25)	(0.28) (3.29)	0.31 (34)
Agriculture		−0.01 (−0.56)	−0.04 (−2.87)	−0.01 (−0.33)	(0.49) (3.61)	0.21 (37)
Mining, manufacturing, and construction		— (0.24)	−0.03 (−2.31)	−0.02 (−0.67)	0.42 (3.00)	0.15 (35)
Utilities		0.03 (1.44)	−0.04 (−2.31)	−0.02 (−0.45)	0.44 (2.46)	0.38 (20)
Labor and social security		0.02 (2.58)	— (−0.06)	— (0.23)	−0.05 (0.72)	0.19 (33)

[1]Measured in number of employees per 100 inhabitants.
[2]In thousands of U.S. dollars.
[3]In thousands.
[4]n = number of observations in the sample.

Table 18. IGEM Indices and Predicted Level of Central Government Wages

(Wages expressed in local currency units)

Country	Year	IGEM Index	Predicted Wage of Central Government Employees	Average Wage	Actual Wage of Central Government Employees (in U.S. dollars)
Australia	1980	72.8	13,382	9,744	11,504
Austria	1979	61.6	211,152	130,083	10,464
Belgium	1980	99.2	590,421	585,548	18,575
Canada	1981	123.9	17,099	21,183	17,862
Denmark	1981	132.8	116,462	154,669	21,115
Germany, Fed. Rep. of	1980	184.9	27,523	50,899	25,982
Iceland	1980	89.5	108,428	97,073	15,559
Ireland	1978	91.1	5,270	4,803	9,771
Italy	1980	81.8	13,643,062	11,165,593	12,000
Japan	1980	139.5	3,080,668	4,296,364	21,164
Netherlands	1980	154.7	34,569	53,488	25,123
New Zealand	1981	65.8	22,302	14,679	12,102
Norway	1979	110.5	77,978	86,185	17,496
Sweden	1979	147.1	55,963	82,347	19,859
United Kingdom	1980	91.5	7,043	6,443	15,366
United States	1981	122.3	15,160	18,540	18,540

Table 18 (concluded). IGEM Indices and Predicted Level of Central Government Wages

(Wages expressed in local currency units)

Country	Year	IGEM Index	Predicted Wage of Central Government Employees	Average Wage	Actual Wage of Central Government Employees (in U.S. dollars)
Benin	1979	176.7	321,423	568,031	2,826
Botswana	1979	124.8	2,295	2,865	3,633
Burundi	1978	390.7	50,138	195,880	2,176
Cameroon	1981	228.3	649,114	1,481,800	5,156
Congo	1978	183.7	426,101	782,665	3,745
Kenya	1980	75.7	927	702	1,856
Liberia	1982	76.7	4,159	3,191	3,191
Mauritius	1980	54.0	28,402	15,324	2,020
Senegal	1976	174.5	508,779	887,952	3,573
South Africa	1982	135.5	7,620	10,326	10,523
Swaziland	1982	77.6	3,641	2,826	2,773
Tanzania	1978	98.9	10,491	10,381	1,400
Togo	1980	98.8	486,547	480,796	2,129
Uganda	1982	108.6	30,957	33,627	339
Zambia	1980	100.7	2,086	2,101	2,615
Zimbabwe	1979	110.1	2,179	2,399	3,560
India	1977	107.1	6,457	6,916	843
Korea	1981	76.1	2,535,552	1,929,403	2,754
Philippines	1979	61.1	15,498	9,463	1,276
Singapore	1981	46.4	28,445	13,199	6,445
Sri Lanka	1980	37.3	21,362	7,976	443
Cyprus	1980	100.6	3,554	3,576	9,804
Bahrain	1980	69.4	6,945	4,822	12,825
Egypt	1979	103.2	1,680	1,734	2,477
Oman	1980	63.8	5,607	3,577	10,414
Argentina	1981	68.3	57,959,671	39,560,593	5,458
Bahamas	1978	70.8	11,954	8,464	8,464
Belize	1981	. . .	—	6,697	3,348
Ecuador	1980	72.6	108,879	78,996	3,160
El Salvador	1982	97.1	8,353	8,114	3,246
Guatemala	1981	83.0	3,555	2,951	2,951
Jamaica	1980	130.6	7,070	9,236	5,185
Panama	1979	92.2	4,981	4,590	4,590
St. Lucia	1981	72.6	10,544	7,652	2,834

IX Some Broad Conclusions

The detailed information arising from this work is embodied in the tables and text, but attention might be drawn to a number of principal conclusions and results.

1. It is surprising and depressing how little information is readily available on public sector employment and pay. Perhaps the Fund, the ILO, or the World Bank should devote some of their resources, proportionate to the importance of the public sector in most of their member countries, to collecting and publishing consistent time-series data on this subject.

2. Central government decisions on wages and salaries in developing countries are likely to affect 15 to 40 percent of employed workers in the urban labor market and therefore have a pervasive "leverage" effect on domestic unit wage costs. In terms of formal incomes policies or in formal wage bargaining, this is likely to be an important influence.

3. General government (central, state, and local) employees average 7 per 100 inhabitants for OECD countries and only 3 for developing countries. Among OECD countries, Sweden (14.7), Denmark (11.4), and the United Kingdom (9.6) combine large local governments with large central governments to create these high percentages for general government. The mean employment share of the central government in total general government employment in developing countries is approximately 85 percent. This figure contrasts with a ratio of only 42 percent in the OECD countries. As a result, leverage is likely to be more powerful in local authorities in OECD countries than in developing countries.

4. Employees of nonfinancial public enterprises are quantitatively more significant in developing countries, averaging 14 percent in nonagricultural sector employment, in contrast to only 4 percent in the OECD countries.

5. Public sector employees average 44 percent of nonagricultural sector employment in developing countries compared with 24 percent for the OECD countries. In some developing countries, the ratio can reach as high as 72 percent (India) or 87 percent (Benin). In the OECD, the public sector's percentage of the total nonagriculturally employed is highest: 36 percent (New Zealand), 34 percent (Sweden), 33 percent (Belgium), and 31 percent (United Kingdom). Broadly speaking, most OECD countries can expect to have one fifth to one fourth of their total active labor force employed in the public sector.

6. The total share of wages in national income is positively correlated with the share of the central government wage bill in GDP; the share of the state and local government wage bill has no effect on the overall wage bill.

7. The functional structure of public expenditure is a key determinant of the magnitude of public sector wage and salary expenditure. The relatively higher importance of wages at the state and local government level reflects the lesser importance of cash transfers or services commissioned outside the public sector.

8. Total government employment per capita tends to *increase* as per capita income rises, thus supporting the validity of the alternative test of Wagner's law presented in this study. This is a particularly strong result when one considers that the expansion of the public sector in some developed countries has taken the form of transfers and the contracting out of services rather than through the provision of direct employment. The relationship is particularly strong for countries with a per capita income in excess of US$800. State and local government employment per capita is not significantly influenced by population size, and neither is general government nor public sector employment. On the other hand, the share of central government employment in total nonagricultural employment declines with per capita income; for countries with a per capita income of less than US$1,400, the share of total general government employment declines; above that income level, it increases. Public sector employment as a share of nonagricultural employment declines with per capita income.

9. The more centrally planned the economy, the higher the share in the nonagriculturally employed of employees in state and local government, nonfinancial public enterprises, and the public sector.

10. It is striking how high the state and local government wage bill is compared with that of central government in many countries where government is typically thought of as centrally dominated; for example, in Japan, 69 percent of the wage bill is paid to local government officials, and almost 70 percent in Denmark. This emphasizes the importance of wage settlements at the local government level; in speaking of national wage policy, there must be an appreciation of whether or not

the central government has de facto control over local government pay and hiring.

11. In some developing countries, the wage bill of nonfinancial public enterprises can be as high as 50 percent of the total public sector wage bill (e.g., in Brazil).

12. Central government wages in developing countries are, on average, 20 percent of total compensation of employees in the economy, with the highest ratio in the African region and the lowest in Latin America.

13. In developing countries, the average wage in the government sector appears to be less than that in the nonagricultural private sector, suggesting that government sector employees in these countries may not be able to translate their numerical strength into commensurate strength in their wage rates relative to their peers in the modern component of the private sector (but see point (14) for remuneration in industrial countries).

14. In the OECD countries, the average central government wage is approximately 1.7 times per capita income; in the developing countries, it is approximately 4.4 times per capita income. The highest ratio within the OECD is for Ireland (2.5), and in the developing countries the ratio averages 6.1 in Africa and 2.9 in Asia and Latin America. In Benin, Burundi, and Senegal, the ratio is over 9.9. The difference between industrial and developing countries in this ratio may reflect differences in the educational requirements of government employment relative to that required of the labor force outside government.

15. Taking observations (13) and (14) together suggests that the average private modern sector wage must be a much greater multiple of per capita income in developing countries than in OECD countries, which in turn is likely to be related to the small relative size of the modern sector in developing countries.

16. The multiple of average central government salary to per capita income is positively related to per capita income for countries with a per capita income of *less* than US$600; at higher per capita income levels, there is no obvious statistical relationship. A high share of the public sector in nonagricultural sector employment has a clear positive impact on the ratio. The regional variations in the multiple of salaries to GDP per capita among low per capita income countries should be emphasized; there seems to be a general practice for civil servants in Africa to be much better off relative to the general population than their counterparts elsewhere in the world.

17. Central government employment appears to be better paid on average than private sector employment, although of course, it must be kept in mind that the mix of jobs in the two sectors is likely to be quite different. In countries such as Canada, Japan, Denmark, and the Federal Republic of Germany, the public sector appears to be paid almost one-third more than the private sector.

18. On average, central government employees are almost uniformly better paid than the average employee at the state or local government level; this may reflect the higher cost of living in capital cities. It may also reflect a higher educational content required in the jobs of central government employment relative to those at the state and local government level.

19. Although the average salary per employee in the nonfinancial public enterprise sector is generally higher than that paid in the central government, the data suggest some notable exceptions to this pattern.

20. While no one would argue that relative salaries across occupations should bear an identical relationship in every country, the discrepancies in some cases are large enough to raise questions about the rationale. It is also interesting to note the wide variation in the *relative* salaries of positions in the same sector, for example, between primary school and secondary school teachers.

21. Across positions within countries, the variance of salary scales can be quite extreme; in Kenya the standard deviation of the index is 208, relative to a mean index for a clerical officer of 100. In Trinidad and Tobago, the standard deviation reached 247. In other countries the salary spread is quite tight; for instance, in Denmark and Sweden, the standard deviation is only 38 and 18, respectively.

22. For some countries in the sample, significant variations are apparent in the degree of inequality in the overall public sector salary structure. Countries such as Korea, the United Kingdom, Sweden, and New Zealand show a relatively high degree of equality, while others, such as Guatemala, Kenya, and Senegal, have relatively unequal salary structures.

23. The mean number of personnel employed in central government administration per 100 inhabitants for OECD and non-oil developing countries is remarkably similar; typically, African countries have the highest level of administrative employment (0.29 per 100 inhabitants), and Asian countries the lowest (0.14). Those employed in the administrative sector of government appear to be paid rather more than the average for the public service.

24. Payments to educators in the public service in Africa and Asia are markedly above the average for government employee pay scales in these regions.

25. Employment of defense forces and police is higher in the developing countries than in OECD countries. However, the country with the highest percentage of its population committed to defense in the OECD is the United States. The variance in the number of defense personnel per capita in developing countries is wide. Swaziland requires 6.9 military per 1,000 inhabitants, and Kenya only 0.8. In Europe, police forces tend to be paid approximately the same as those in the defense services. In many developing countries, the police forces appear to have an average wage that is much lower than the average wage in the defense forces. This fact may be

explained, in part, by special allowances and other fringe benefits.

26. The econometric analysis of the determinants of government employment can be used to estimate an IGEM index to indicate whether a country employs more or fewer employees than would have been predicted, given its per capita income, population, and type of economic system. Belgium, Ireland, and Italy appear to employ a total general government, which is just as would be predicted. Some countries employ more than might have been predicted, for example, notably the Scandinavian countries, the United Kingdom, and New Zealand. The indices can suggest the existence of an imbalance. The sources of the imbalance can be determined only through a more detailed analysis of the country's situation. For instance, the high level of the index for the United Kingdom might reflect the inclusion of the National Health Service employees in central government employment. In another case, Japan has lower than expected employment levels and a higher than expected average central government wage rate relative to per capita income. It is not possible from these results to determine whether its wages are excessive and its employment in government low, or whether the Japanese are paying for a highly productive, elite corps of civil servants through a high wage incentive. However, the results do provoke such questions.

Finally, much work remains to be done on most of these issues. This paper will have achieved its purpose if attention has been drawn to these issues and if the need for better data has been recognized.

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Appendix I
Statistical Tables and Charts

Table 19. Data Requested From 139 Countries[1]

Country	Response		
	Letter	Publication	Specially prepared data
Industrial countries			
Australia	x	x	x
Belgium	x	x	x
Canada	x	x	x
Denmark	x	x	
Iceland	x	x	x
Ireland	x	x	
Italy	x	x	
Japan	x	x	
Netherlands	x	x	
Netherlands Antilles	x	x	
New Zealand	x	x	x
Norway	x	x	
Sweden	x	x	
United Kingdom	x	x	x
United States	x	x	
Developing countries			
Oil exporting countries			
Indonesia	x		
Kuwait	x	x	
Oman	x	x	
Non-oil developing countries			
Africa			
Cameroon	x		x
Ethiopia	x		
Kenya	x	x	x
Liberia			x
Mauritius	x	x	x
Senegal		x	
Sierra Leone	x		
South Africa	x		
Tanzania	x		x
Togo	x	x	x
Uganda		x	x
Zambia	x		x
Asia			
India	x	x	
Korea	x		x
Philippines	x	x	
Singapore	x	x	
Solomon Islands		x	
Sri Lanka	x	x	
Thailand	x		x
Europe			
Cyprus	x	x	x
Portugal	x		
Middle East			
Bahrain	x	x	x
Egypt	x	x	
Western Hemisphere			
Argentina	x	x	
Bahamas	x	x	
Ecuador	x		x
El Salvador	x		x
Guatemala	x	x	x
Guyana	x		x
Jamaica	x	x	
Panama	x	x	
St. Lucia	x	x	

[1]Countries not mentioned did not respond.

Table 20. Employees by Level of Government

(In Thousands of Persons)

Country	Year	Central Government	State and Local Government	Nonfinancial Public Enterprises	General Government	Public Sector
Australia	1980	302.0	1,135.4	166.0	1,437.4	1,603.4
Austria	1979	289.2	319.0	...	605.0	...
Belgium	1980	481.6	184.6	198.4	666.0	864.4
Canada	1981	360.1	1,146.0	383.4	1,506.1	1,889.5
Denmark	1981	131.5	449.5	60.3	581.0	641.3
Finland	1979	...	...	...	386.0	...
France	1980	...	...	...	3,078.0	...
Germany, Fed. Rep. of	1980	800.6	2,931.7	1,006.9	3,732.2	4,739.1
Iceland	1980	12.4	2.1	2.8	14.5	17.3
Ireland	1978	76.0	73.0	73.0	149.0	222.0
Italy	1980	1,692.7	1,208.0	439.0	3,046.0	3,485.0
Japan	1980	1,210.0	3,190.3	808.0	4,380.8	5,188.8
Luxembourg	1979	...	...	...	17.0	...
Netherlands	1980	354.1	418.0	46.0	772.1	818.1
New Zealand	1981	212.7	47.1	60.9	259.8	320.7
Norway	1979	130.0	228.0	...	358.0	...
Spain	1979	...	...	...	1,488.0	...
Sweden	1979	211.3	1,004.4	136.1	1,215.7	1,351.8
Switzerland	1979	...	...	...	303.0	...
United Kingdom	1980	2,327.0	3,027.0	2,036.0	5,354.0	7,390.0
United States	1981	4,252.0	13,445.0	668.0	17,697.0	18,365.0
Benin	1979	25.4	4.0	21.9	29.4	51.3
Botswana	1979	17.8	5.1	...	24.0	...
Burundi	1978	18.0	3.6	13.7	21.6	35.3
Cameroon	1981	56.1	—	...	56.1	...
Congo	1978	37.9	...	...	...	...
Kenya	1980	344.8	40.0	100.1	365.0	465.1
Liberia	1982	49.2	...	6.4	49.2	55.6
Madagascar	1980	...	...	...	93.5	131.0
Mauritius	1980	49.1	5.4	20.0	54.5	74.5
Senegal	1976	45.9	...	18.0	45.9	63.9
South Africa	1982	204.7	70.0	...	274.7	...
Sudan	1978	...	...	...	279.0	...
Swaziland	1982	18.4	—	1.5	18.4	19.9
Tanzania	1978	249.2	—	171.7	249.2	420.9
Togo	1980	40.2	—	...	40.2	...
Uganda	1982	137.2	54.0	80.0	191.2	271.2
Zambia	1980	143.9	4.4	124.0	151.5	275.5
Zimbabwe	1979	105.7	22.0	...	127.7	...
India	1977	4,186.0	7,119.0	3,675.0	11,305.0	14,980.0
Korea	1981	1,015.7	160.4	220.2	1,176.0	1,396.2
Philippines	1979	798.5	161.7	1,066.7	960.2	2,026.9
Singapore	1981	128.8	—	...	128.8	...
Sri Lanka	1980	400.6	45.0	757.9	445.6	1,203.5
Thailand	1979	...	...	...	1,370.0	...
Cyprus	1980	20.3	0.6	...	20.9	...
Portugal	1977	...	...	...	254.0	...
Bahrain	1980	22.5	0.5	...	23.0	...
Egypt	1979	572.6	1,067.7	575.4	1,640.3	2,215.7
Oman	1980	38.8	—	...	38.8	...
Argentina	1981	573.5	703.0	313.8	1,276.5	1,590.3
Bahamas	1978	11.2	—	1.8	11.2	13.0
Barbados	1981	...	...	...	27.0	...
Belize	1981	3.3	—	...	3.3	...
Ecuador	1980	163.3	...	...	...	...
El Salvador	1982	111.5	...	13.9	...	...
Guatemala	1981	105.0	18.8	7.3	123.8	131.1
Honduras	1981	27.0	...	...	...	...
Jamaica	1980	63.2	43.7	...	106.9	...
Panama	1979	63.7	4.1	38.5	71.7	110.2
St. Lucia	1981	4.6	0.4	...	5.0	...

Table 21. Government Employees Per Capita

(Number of employees per hundred inhabitants)

Country	Year	Central Government	State and Local Government	Nonfinancial Public Enterprises	General Government	Public Sector
Australia	1980	2.07	7.77	1.14	9.83	10.97
Austria	1979	3.85	4.25	. . .	8.06	. . .
Belgium	1980	4.88	1.87	2.01	6.75	8.77
Canada	1981	1.49	4.73	1.58	6.22	7.80
Denmark	1981	2.57	8.78	1.18	11.35	12.53
Finland	1979	. . .	. . .	. . .	8.11	. . .
France	1980	. . .	. . .	. . .	5.73	. . .
Germany, Fed. Rep. of	1980	1.30	4.76	1.64	6.06	7.70
Iceland	1980	5.49	0.93	1.24	6.42	7.65
Ireland	1978	2.30	2.21	2.21	4.50	6.71
Italy	1980	2.97	2.12	0.77	5.34	6.11
Japan	1980	1.04	2.73	0.69	3.75	4.44
Luxembourg	1979	. . .	. . .	. . .	4.68	. . .
Netherlands	1980	2.50	2.96	0.33	5.46	5.79
New Zealand	1981	6.86	1.52	1.96	8.38	10.35
Norway	1979	3.19	5.60	. . .	8.80	. . .
Spain	1979	. . .	. . .	. . .	4.00	. . .
Sweden	1979	2.55	12.12	1.64	14.66	16.31
Switzerland	1979	. . .	. . .	. . .	4.76	. . .
United Kingdom	1980	4.16	5.41	3.64	9.57	13.21
United States	1981	1.87	5.91	0.29	7.77	8.07
Benin	1979	0.76	0.12	0.66	0.88	1.54
Botswana	1979	2.25	0.65	. . .	3.04	. . .
Burundi	1978	0.42	0.08	0.32	0.51	0.83
Cameroon	1981	0.66	—	. . .	0.66	. . .
Congo	1978	2.60	. . .	. . .	. . .	. . .
Kenya	1980	2.10	0.24	0.61	2.23	2.84
Liberia	1982	2.41	—	0.31	2.41	2.73
Madagascar	1980	. . .	. . .	. . .	1.07	1.50
Mauritius	1980	5.40	0.59	2.20	5.99	8.19
Senegal	1976	0.90	—	0.35	0.90	1.25
South Africa	1982	0.70	0.24	. . .	0.94	. . .
Sudan	1978	. . .	. . .	. . .	1.61	. . .
Swaziland	1982	3.35	—	0.27	3.35	3.62
Tanzania	1978	1.43	—	0.98	1.43	2.41
Togo	1980	1.53	—	. . .	1.53	. . .
Uganda	1982	1.01	0.40	0.59	1.40	1.99
Zambia	1980	2.47	0.08	2.13	2.60	4.73
Zimbabwe	1979	1.53	0.32	. . .	1.85	. . .
India	1977	0.67	1.14	0.59	1.81	2.39
Korea	1981	2.66	0.42	0.58	3.08	3.65
Philippines	1979	1.71	0.35	2.29	2.06	4.35
Singapore	1981	5.39	—	. . .	5.39	. . .
Sri Lanka	1980	2.72	0.31	5.14	3.02	8.16
Thailand	1979	. . .	. . .	. . .	2.97	. . .
Cyprus	1980	3.25	0.10	. . .	3.34	. . .
Portugal	1977	. . .	. . .	. . .	2.61	. . .
Bahrain	1980	6.25	0.14	. . .	6.39	. . .
Egypt	1979	1.40	2.61	1.40	4.00	5.41
Oman	1980	4.36	—	. . .	4.36	. . .
Argentina	1981	2.12	2.60	1.16	4.72	5.88
Bahamas	1978	4.98	—	0.80	4.98	5.78
Barbados	1981	. . .	. . .	. . .	10.71	. . .
Belize	1981	1.94	—	. . .	1.94	. . .
Ecuador	1980	1.96	. . .	. . .	. . .	. . .
El Salvador	1982	2.32	. . .	0.29	. . .	. . .
Guatemala	1981	1.45	0.26	0.10	1.71	1.81
Honduras	1981	0.73	. . .	. . .	. . .	. . .
Jamaica	1980	2.89	2.00	. . .	4.88	. . .
Panama	1979	3.39	0.22	2.05	3.81	5.86
St. Lucia	1981	3.85	0.33	. . .	4.18	. . .

Table 22. Government Employees as Share of Nonagricultural Sector Employment

(In percent)

Country	Year	Central Government	State and Local Government	Nonfinancial Public Enterprises	General Government	Public Sector
Australia	1980	5.17	19.45	2.84	24.62	27.46
Austria	1979	10.45	11.53	...	21.86	...
Belgium	1980	18.28	7.01	7.53	25.28	32.82
Canada	1981	3.13	9.95	3.33	13.07	16.40
Denmark	1981	5.73	19.60	2.63	25.34	27.97
Finland	1979	...	...	...	20.49	...
France	1980	...	...	...	17.66	...
Germany, Fed. Rep. of	1980	3.37	12.35	4.24	15.72	19.96
Iceland	1980	12.28	2.08	2.77	14.36	17.13
Ireland	1978	9.17	8.81	8.81	17.97	26.78
Japan	1980	2.42	6.38	1.61	8.75	10.37
Italy	1980	9.62	6.86	2.49	17.30	19.80
Luxembourg	1979	...	...	...	11.41	...
Netherlands	1980	8.22	9.70	1.07	17.92	18.99
New Zealand	1981	24.20	5.36	6.93	29.56	36.48
Norway	1979	8.25	14.47	...	22.72	...
Spain	1979	...	...	...	15.63	...
Sweden	1979	5.29	25.14	3.41	30.43	33.84
Switzerland	1979	...	...	...	11.05	...
United Kingdom	1980	9.70	12.62	8.49	22.31	30.80
United States	1981	4.53	14.31	0.71	18.83	19.55
Benin	1979	43.05	6.78	37.12	49.83	86.95
Botswana	1979	25.07	7.18	...	33.80	...
Cameroon	1981	8.46	—	...	8.46	...
Central African Rep.	1979	...	...	...	...	29.90
Ghana	1979	...	...	...	...	73.90
Kenya	1980	28.95	3.36	8.40	30.65	39.05
Liberia	1982	52.90	—	6.88	52.90	59.78
Malawi	1979	...	...	...	...	39.20
Mauritius	1980	34.82	3.83	14.18	38.65	52.84
Senegal	1976	32.79	—	12.86	32.79	45.64
South Africa	1982	4.44	1.52	...	5.96	...
Swaziland	1982	22.44	—	1.83	22.44	24.27
Tanzania	1978	46.23	—	31.86	46.23	78.09
Togo	1980	42.95	—	...	42.95	...
Uganda	1982	...	...	...	...	42.20
Zambia	1980	42.32	1.29	36.47	44.56	81.03
Zimbabwe	1979	16.31	3.40	...	19.71	...
India	1977	20.13	34.23	17.67	54.35	72.02
Korea	1981	11.57	1.83	2.51	13.40	15.91
Philippines	1979	10.44	2.12	13.95	12.56	26.51
Singapore	1981	12.17	—	...	12.17	...
Sri Lanka	1980	15.17	1.70	28.71	16.88	45.59
Thailand	1979	...	...	...	23.95	20.10
Cyprus	1980	15.15	0.45	...	15.60	...
Portugal	1977	...	...	...	9.49	...
Bahrain	1980	16.92	0.38	...	17.29	...
Egypt	1979	10.29	19.19	10.34	29.49	39.83
Oman	1980	25.87	—	...	25.87	...
Argentina	1981	8.19	10.04	4.48	18.24	22.72
Bahamas	1978	16.00	—	2.57	16.00	18.57
Barbados	1981	...	...	...	24.11	...
Ecuador	1980	11.59	...	...	...	...
El Salvador	1982	74.83	...	9.33	...	49.30
Guatemala	1981	13.46	2.41	0.94	15.87	16.81
Honduras	1981	5.25	...	...	...	...
Jamaica	1980	13.83	9.56	...	23.39	...
Panama	1979	17.12	1.10	10.35	19.27	29.62
St. Lucia	1981	25.99	2.26	...	28.25	...

Table 23. Distribution of Government Employees by Level of Government

(In percent)

Country	Year	Central Government Employees in General Government	State and Local Government Employees in General Government	Central Government Employees in Public Sector	State and Local Government Employees in Public Sector	General Government Employees in Public Sector	Nonfinancial Public Enterprise Employees in Public Sector
Australia	1980	21.01	78.99	18.83	70.81	89.65	10.35
Austria	1979	47.80	52.73	...	...	...	...
Belgium	1980	72.31	27.72	55.71	21.36	77.05	22.95
Canada	1981	23.91	76.09	19.06	60.65	79.71	20.29
Denmark	1981	22.63	77.37	20.51	70.09	90.60	9.40
Germany, Fed. Rep. of	1980	21.45	78.55	16.89	61.86	78.75	21.25
Iceland	1980	85.52	14.48	71.68	12.14	83.82	16.18
Ireland	1978	51.01	48.99	34.23	32.88	67.12	32.88
Italy	1980	55.57	39.66	48.57	34.66	87.40	12.60
Japan	1980	27.62	72.82	23.32	61.48	84.43	15.57
Netherlands	1980	45.86	54.14	43.28	51.09	94.38	5.62
New Zealand	1981	81.87	18.13	66.32	14.69	81.01	18.99
Norway	1979	36.31	63.69	...	...	...	...
Sweden	1979	17.38	82.62	15.63	74.30	89.93	10.07
United Kingdom	1980	43.46	56.54	31.49	40.96	72.45	27.55
United States	1981	24.03	75.97	23.15	73.21	96.36	3.64
Benin	1979	86.39	13.61	49.51	7.80	57.31	42.69
Botswana	1979	74.17	21.25	...	...	...	...
Burundi	1978	83.30	16.70	50.94	10.21	61.15	38.85
Cameroon	1981	100.00	—	...	...	...	...
Kenya	1980	94.47	10.96	74.13	8.60	78.48	21.52
Liberia	1982	100.00	—	88.49	—	88.49	11.51
Madagascar	1980	...	...	...	...	71.37	...
Mauritius	1980	90.09	9.91	65.91	7.25	73.15	26.85
Senegal	1976	100.00	—	71.83	—	71.83	28.17
South Africa	1982	74.52	25.48	...	...	...	...
Swaziland	1982	100.00	—	92.46	—	92.46	7.54
Tanzania	1978	100.00	—	59.21	—	59.21	40.79
Togo	1980	100.00	—	...	...	...	...
Uganda	1982	71.76	28.24	50.59	19.91	70.50	29.50
Zambia	1980	94.98	2.90	52.23	1.60	54.99	45.01
Zimbabwe	1979	82.77	17.23	...	...	...	...
India	1977	37.03	62.97	27.94	47.52	75.47	24.53
Korea	1981	86.37	13.64	72.75	11.49	84.23	15.77
Philippines	1979	83.16	16.84	39.40	7.98	47.37	52.63
Singapore	1981	100.00	—	...	...	...	...
Sri Lanka	1980	89.90	10.10	33.29	3.74	37.03	62.97
Cyprus	1980	97.13	2.87	...	...	...	...
Bahrain	1980	97.83	2.17	...	...	...	...
Egypt	1979	34.91	65.09	25.84	48.19	74.03	25.97
Oman	1980	100.00	...	...	...	...	...
Argentina	1981	44.93	55.07	36.06	44.21	80.27	19.73
Bahamas	1978	100.00	—	86.15	—	86.15	13.85
Belize	1981	100.00	—	...	...	...	...
Guatemala	1981	84.81	15.15	80.09	14.31	94.43	5.57
Jamaica	1980	59.12	40.88	...	...	...	...
Panama	1979	88.84	5.72	57.80	3.72	65.06	34.94
St. Lucia	1981	92.00	8.00	...	...	...	...

Table 24. Distribution of Government Wages by Level of Government

(In percent)

Country	Year	Central Government Employees in General Government	State and Local Government Employees in General Government	Central Government Employees in Public Sector	State and Local Government Employees in Public Sector	General Government Employees in Public Sector	Nonfinancial Public Enterprise Employees in Public Sector
Canada	1981	21.48	78.52	19.02	58.65	77.67	22.33
Denmark	1981	30.30	69.70	.	.	.	.
France	1980	76.42	23.58	.	.	.	.
Germany, Fed. Rep. of	1980	24.01	75.99	.	.	.	.
Italy	1980	77.45	22.55	69.83	20.34	90.16	9.84
Japan	1980	30.96	69.04	.	.	.	.
Netherlands	1980	41.77	58.23	.	.	.	.
New Zealand	1981	81.86	18.14	68.56	15.20	83.76	16.24
Norway	1979	34.92	65.08	.	.	.	.
United Kingdom	1980	49.26	50.74	32.88	33.88	66.76	33.24
United States	1981	29.61	70.39	27.94	66.42	94.37	5.63
Botswana	1979	83.74	16.26	.	.	.	.
Cameroon	1981	100.00	—	.	.	.	.
Kenya	1980	89.80	10.20	70.01	7.95	77.96	22.04
Liberia	1982	100.00	—	88.75	—	88.75	11.25
Senegal	1976	100.00	.	.	.	.	.
Swaziland	1982	100.00	—	91.23	—	91.23	8.77
Tanzania	1978	100.00	—	.	.	.	.
Togo	1980	100.00	—	.	.	.	.
Zambia	1980	97.02	2.98	53.65	1.65	55.30	44.70
Singapore	1981	100.00	—	.	.	.	.
Sri Lanka	1980	100.00	—	.	.	.	.
Cyprus	1980	100.00	—	.	.	.	.
Bahrain	1980	100.00	—	.	.	.	.
Oman	1980	100.00	—	.	.	.	.
Argentina	1981	49.76	50.24	37.73	38.09	75.82	24.18
Bahamas	1978	100.00	—	.	.	.	.
Belize	1981	100.00	—	.	.	.	.
Brazil	1979	39.42	60.58	19.82	30.45	50.27	49.73
Costa Rica	1978	57.18	42.82	48.13	36.04	84.17	15.83
El Salvador	1982	100.00	—	88.43	.	88.43	11.57
Guatemala	1981	84.83	15.17	77.92	13.93	91.85	8.15
Panama	1979	96.53	3.47	.	.	.	.
St. Lucia	1981	100.00	—	.	.	.	.

Table 25. Share of Government Wages in National Income at Market Prices

(In percent)

Country	Year	Central Government	State and Local Government	General Government	Nonfinancial Public Enterprises	Public Sector
Australia	1980	2.98	...	...	...	...
Austria	1979	2.68	...	...	...	...
Belgium	1980	9.98	...	...	...	...
Canada	1981	2.96	9.12	12.07	3.47	15.54
Denmark	1981	7.79	17.92	25.71	...	...
Finland	1979	4.40	...	...	...	...
France	1980	5.87	2.34	9.91	...	...
Germany, Fed. Rep. of	1980	3.12	9.88	13.00	...	...
Iceland	1980	13.63	...	...	4.78	...
Ireland	1978	6.86	...	...	...	...
Italy	1980	7.00	2.04	9.04	0.99	10.03
Japan	1980	2.80	6.24	9.03	...	...
Luxembourg	1979	8.85	...	...	...	...
Netherlands	1980	7.09	9.89	16.98	...	...
New Zealand	1981	13.32	2.95	16.27	3.15	19.42
Norway	1979	6.28	11.70	17.97	...	...
Spain	1979	9.31	...	...	...	...
Sweden	1979	4.92	...	...	...	...
Switzerland	1979	1.54	...	...	...	...
United Kingdom	1980	8.65	8.92	17.57	8.75	26.32
United States	1981	3.79	9.01	12.79	0.76	13.56
Benin	1979	8.58	...	...	1.69	...
Botswana	1979	11.51	2.23	13.74	...	...
Burundi	1978	6.98	...	...	...	...
Ghana	1979	5.62	...	...	...	...
Kenya	1980	11.12	1.26	12.38	3.50	15.88
Liberia	1982	15.12	—	15.12	1.92	17.03
Malawi	1979	4.64	...	...	...	...
Mauritius	1980	13.41	...	...	...	...
Morocco	1979	12.88	...	...	...	...
Sierra Leone	1979	8.80	...	...	...	...
South Africa	1982	3.57	...	...	...	...
Sudan	1978	2.47	...	...	...	...
Swaziland	1982	13.00	—	13.00	1.25	14.25
Togo	1980	11.84	—	11.84	...	...
Tunisia	1978	11.89	...	...	...	...
Zaire	1978	14.68	...	...	...	...
Zambia	1980	14.44	0.44	14.88	12.03	26.91
Zimbabwe	1979	11.65	...	...	...	...
India	1977	3.83	...	...	2.10	...
Korea	1981	15.62	...	...	2.78	...
Malaysia	1980	10.45	...	...	...	...
Philippines	1979	4.29	...	...	...	...
Sri Lanka	1980	5.94	—	5.94	...	...
Thailand	1979	4.69	...	...	...	...
Cyprus	1980	11.15	—	11.15	...	...
Greece	1978	18.63	...	...	...	...
Turkey	1979	10.20	...	...	...	...
Egypt	1979	9.30	...	...	...	...
Israel	1979	13.27	...	...	...	...
Argentina	1981	4.61	4.66	9.27	2.95	12.22
Belize	1981	5.44	—	5.44	...	...
Brazil	1979	3.00	4.60	7.60	7.52	15.12
Chile	1979	11.27	...	...	5.07	...
Colombia	1980	3.11	...	...	...	...
Costa Rica	1978	8.86	6.63	15.49	2.91	18.41
Ecuador	1980	5.06	...	...	...	...
El Salvador	1982	12.46	—	12.46	1.63	14.09
Guyana	1979	16.15	...	...	...	...
Jamaica	1980	15.50	...	...	...	...
Mexico	1979	5.73	...	...	...	...
Nicaragua	1976	6.72	...	...	...	...
Panama	1979	13.02	0.47	13.49	...	...
Uruguay	1979	7.77	...	...	...	...

Table 26. Share of Government Wages in Total Wages in the Economy

(In percent)

Country	Year	Central Government	State and Local Government	General Government	Nonfinancial Public Enterprises	Public Sector
Australia	1980	4.23	...	...	...	...
Austria	1979	3.59	...	...	...	...
Belgium	1980	14.03	...	...	...	...
Canada	1981	3.99	12.31	16.31	4.69	21.00
Denmark	1981	10.67	24.55	35.23	...	...
Finland	1979	5.84	...	...	...	...
France	1980	10.76	3.32	14.08	...	...
Germany, Fed. Rep. of	1980	4.40	13.93	18.33	...	...
Ireland	1978	10.19	...	...	...	...
Italy	1980	9.85	2.87	12.72	1.39	14.10
Japan	1980	4.20	9.36	13.56	...	...
Luxembourg	1979	12.84	...	...	...	...
Netherlands	1980	9.77	13.61	23.38	...	...
New Zealand	1981	19.79	4.39	24.17	4.69	28.86
Norway	1979	10.83	20.19	31.02	...	...
Spain	1979	14.65	...	...	...	...
Sweden	1979	5.48	...	...	...	...
Switzerland	1979	2.21	...	...	...	...
United Kingdom	1980	10.91	11.24	22.14	11.03	33.17
United States	1981	4.92	11.69	16.61	0.99	17.60
Benin	1979	29.70	...	...	5.86	...
Botswana	1979	23.20	4.50	27.70	...	...
Burundi	1978	39.15	...	...	...	...
Kenya	1980	27.62	3.14	30.76	8.69	39.45
Malawi	1979	16.94	...	...	...	...
Mauritius	1980	26.57	...	...	...	...
Morocco	1979	32.15	...	...	...	...
Sierra Leone	1979	27.87	...	...	...	...
South Africa	1982	5.13	...	...	...	...
Sudan	1978	4.26	...	...	...	...
Swaziland	1982	23.18	—	23.18	2.23	25.41
Togo	1980	20.65	—	20.65	...	...
Zambia	1980	21.17	0.65	21.82	17.64	39.46
Zimbabwe	1979	18.66	...	...	...	...
India	1977	8.54	...	...	4.69	...
Korea	1981	34.59	...	...	6.15	...
Sri Lanka	1980	10.38	—	10.38	...	...
Thailand	1979	15.34	...	...	...	...
Greece	1978	41.28	...	...	...	...
Turkey	1979	32.31	...	...	...	...
Egypt	1979	21.78	...	...	...	...
Israel	1979	22.69	...	...	...	...
Argentina	1981	9.66	9.76	19.42	6.19	25.61
Belize	1981	6.07	—	6.07	...	...
Brazil	1979	6.27	9.63	15.90	15.73	31.63
Chile	1979	26.44	...	...	11.88	...
Colombia	1980	7.59	...	...	...	...
Costa Rica	1978	14.71	11.01	25.72	4.84	30.56
Ecuador	1980	12.78	...	...	...	...
Guyana	1979	26.80	...	...	...	...
Jamaica	1980	22.40	...	...	...	...
Mexico	1979	12.09	...	...	...	...
Nicaragua	1976	10.21	...	...	...	...
Panama	1979	17.43	0.63	18.06	...	...
Uruguay	1979	18.72	...	...	...	...

Table 27. Measures of the Level of Government Wages

Country	Year	Average Wage of Central Government Employees (in U.S. dollars)	Ratio of Central government average wage to per capita income	Ratio of Average state and local government wage to central government wage	Ratio of Average nonfinancial public enterprise wage to average central government wage
Australia	1980	11,504	1.16	.	.
Austria	1979	10,464	1.06	. .	. .
Belgium	1980	18,575	1.66	.	.
Canada	1981	17,862	1.51	0.97	1.10
Denmark	1981	21,115	2.29	0.67	
Germany, Fed. Rep. of	1980	25,982	2.10	0.86	
Iceland	1980	15,859	1.60	.	1.55
Ireland	1978	9,771	2.36	. .	. .
Italy	1980	12,000	1.88	0.41	0.84
Japan	1980	21,164	2.14	0.85	. .
Netherlands	1980	25,123	2.28	1.18	. . .
New Zealand	1981	12,102	1.59	1.00	0.83
Norway	1979	17,496	1.48	1.06	. . .
Sweden	1979	19,859	1.49	. . .	. . .
United Kingdom	1980	15,366	1.60	0.79	1.16
United States	1981	18,540	1.64	0.75	1.28
Benin	1979	2,826	9.81	. . .	0.23
Botswana	1979	3,633	4.49	0.68	. . .
Burundi	1978	2,176	15.11	. . .	. . .
Cameroon	1981	5,156	7.39	. . .	. . .
Congo	1978	3,745	5.60	. . .	. . .
Kenya	1980	1,856	4.44	0.98	1.08
Liberia	1982	3,191	5.52	. . .	0.97
Mauritius	1980	2,020	2.04	. . .	. . .
Senegal	1976	3,573	9.90	. . .	. . .
South Africa	1982	10,523	3.78	. . .	. . .
Swaziland	1982	2,773	2.72	. . .	1.18
Tanzania	1978	1,400	5.42	. . .	. . .
Togo	1980	2,129	5.85	. . .	. . .
Uganda	1982	339	3.90	. . .	. . .
Zambia	1980	2,615	4.05	1.01	0.97
Zimbabwe	1979	3,560	6.73	. . .	. . .
India	1977	843	4.80	. . .	0.63
Korea	1981	2,754	4.76	. . .	0.82
Philippines	1979	1,276	2.01	. . .	. . .
Singapore	1981	6,445	1.16	. . .	. . .
Sri Lanka	1980	443	1.77	—	. . .
Cyprus	1980	9,804	2.96	—	. . .
Bahrain	1980	12,825	1.27	—	. . .
Egypt	1979	2,477	5.70	. . .	. . .
Oman	1980	10,414	1.75	. . .	. . .
Argentina	1981	5,458	1.96	0.82	1.17
Bahamas	1978	8,464	1.98	. . .	. . .
Belize	1981	3,348	. . .	. . .	. . .
Ecuador	1980	3,160	2.32	. . .	. . .
El Salvador	1982	3,246	4.61	. . .	1.05
Guatemala	1981	2,951	2.73	1.00	1.50
Jamaica	1980	5,185	4.28	. . .	. . .
Panama	1979	4,590	3.04	0.56	. . .
St. Lucia	1981	2,834	2.59	—	. . .

Table 28. Other Measures of Public/Private Sector Wage Differentials

Country	Year	Ratio of: Average central government wage to average wage of employees outside central government	Average general government wage to average wage of employees outside general government	Average public sector wage to average wage of employees in private sector	Average central government wage to average wage in manufacturing
Australia	1980	0.81	. . .	.	0.82
Austria	1979	0.32	. .	. .	0.94
Belgium	1980	0.73	. .	. .	1.29
Canada	1981	1.29	1.30	1.35	1.11
Denmark	1981	1.96	1.60	. .	1.23
France	1980	. .	0.76	. .	. . .
Germany, Fed. Rep. of	1980	1.32	1.20	. . .	1.86
Ireland	1978	1.12	. .	. . .	1.00
Italy	1980	1.03	0.70	0.67	1.14
Japan	1980	1.77	1.63	. . .	1.46
Netherlands	1980	1.21	1.40	. .	1.88
New Zealand	1981	0.77	0.76	0.71	1.13
Norway	1979	1.35	1.53	.	1.23
Sweden	1979	1.04	.	. .	1.11
United Kingdom	1980	1.14	0.99	1.12	1.38
United States	1981	1.09	0.86	0.88	1.11
Benin	1979	0.56	. . .	. . .	. . .
Botswana	1979	0.90	0.75	. . .	. . .
Burundi	1978	. .	. . .	. . .	2.84
Cameroon	1981	. . .	. . .	. . .	2.38
Kenya	1980	0.94	1.01	1.02	0.95
Mauritius	1980	0.68	. . .	. . .	2.56
South Africa	1982	1.16	. . .	. . .	1.79
Swaziland	1982	1.04	1.04	1.06	0.55
Togo	1980	0.35	0.35	. . .	. . .
Zambia	1980	0.37	0.35	0.15	0.96
Zimbabwe	1979	1.18	. . .	. . .	0.58
India	1977	0.37	. . .	. . .	1.23
Korea	1981	4.40	. . .	. . .	0.91
Sri Lanka	1980	0.65	0.57	. . .	1.11
Cyprus	1980	. . .	. . .	. . .	2.11
Egypt	1979	2.43	. . .	. . .	3.54
Oman	1980	. . .	. . .	. . .	0.60
Argentina	1981	1.20	1.08	1.17	5.31
Bahamas	1978	. . .	. . .	. . .	1.49
Ecuador	1980	1.12	. . .	. . .	1.34
El Salvador	1982	. . .	. . .	. . .	1.49
Guatemala	1981	. . .	. . .	. . .	1.71
Jamaica	1980	1.80	. . .	. . .	. . .
Panama	1979	1.02	0.92	. . .	1.64

[1]Includes employees in the private sector, state and local government sector, and nonfinancial public enterprise sector.
[2]Includes employees in the private sector and nonfinancial public enterprise sector.

Table 29. Average Wage of 15 Different Government Jobs Relative to that of Clerical Officer

(Clerical officer = 100)

Country	Standard Deviation Across Positions	Primary Teacher	Secondary Teacher	Certified Nurse	Medical Doctor	Police Sergeant	Police Corporal	Police Constable	Engineer	Mechanic	Road Inspector	Agricultural Officer	Agricultural Assistant	Animal Health Officer	Animal Health Assistant	Meat Inspector
Australia	29	106	106	168	207	160	141	113	129	112	120	127	108	149	98	127
Belgium	59	138	142	123	230	109	105	95	230	115	...	230	...	230	...	230
Canada	45	140	...	110	254	160	148	118	164	102	...	156	156	209	209	133
Denmark	38	119	130	119	228	139	117	100	160	97	...	...	...	...	95	95
New Zealand	165	414	461	332	633	...	...	...	459	201	...	488	186	541	186	366
Norway	20	120	145	...	...	149	130	122	156	...	...	...	...	...	...	
Sweden	18	106	121	102	154	113	...	104	116	90	102	...	...			
United Kingdom	103	165	253	128	432	237	...	188	354	113	...	347	221	157	110	156
United States	88	185	203	219	367	401	293	216	243	...	...	...	...	265		
Kenya	208	164	449	117	708	154	117	82	571	170	317	533	137	533	137	137
Seychelles	126	151	202	182	523	182	...	100	377	110	...	377	...	222	182	222
Swaziland	120	137	194	194	473	240	194	100	427	155	215	267	121	427	121	267
Togo	78	...	136	108	263	...	...	49	...	65	...	218	49	...	49	...
Uganda	123	100	244	237	446	140	126	100	407	100	172	319	172	428	172	300
Zambia	69	117	153	113	328	121	...	62	206	186	205	148	97	206	96	224
India	126	157	248	148	431	119	88	64	466	200	...	310	219	397	219	219
Singapore	47	...	...	64	194	71	64	35	151	43	39	84	39	84	30	84
Cyprus	42	48	56	100	172	68	59	43	172	134	...	134	88	134	88	120
Bahrain	66	176	176	100	115	...	...	...	270	100	147	228	100	270	100	100
Bahamas	65	118	137	84	292	115	100	81	236	80	126	169	68			80
El Salvador	79	124	140	164	281	94	93	...	333	104	177	162	108	296	104	116
Guatemala	64	90	114	124	...	90	...	...	237	83	...	246	119	246	102	119
Jamaica	58	180	...	158	300	193	163	117	240	...	...	200	...	277	200	165
Panama	132	189	311	265	553	...	...	...	326	113	...	326	174	326	...	140
St. Lucia	135	168	284	209	450	215	190	150	480	...	77	453	219	...	162	...
Trinidad and Tobago	247	288	370	311	1,000	342	290	190	623	223	...	...	311	...		...

Table 30. Central Government Employees by Functional Sector per 100 Inhabitants[1]

Country	Year	Administration	Education	Health	Defense	Police	Finance and Planning
Austria	1979	...	...	...	0.16	...	...
Belgium	1980	0.24	3.18	0.32	0.73	0.33	0.40
Canada	1981	0.27	1.81	0.24	0.46	0.45	...
Denmark	1981	0.25	2.74	5.35	0.63	0.37	...
Finland	1979	...	...	...	0.69	...	...
France	1980	...	...	...	0.57	...	...
Germany, Fed. Rep. of	1980	0.03	1.32	0.59	0.72	0.48	0.07
Iceland	1980	0.35	1.68	2.43	...	0.27	0.27
Ireland	1978	0.34	1.36	0.01	0.42	0.28	0.02
Italy	1980	...	...	...	0.94	...	...
Japan	1980	0.12	1.12	0.19	0.26	0.28	0.02
Netherlands	1980	0.15	1.79	0.03	1.15	0.17	0.27
New Zealand	1981	0.47	...	...	0.52	...	0.02
Spain	1979	...	...	...	0.28	...	...
Sweden	1979	0.48	2.92	4.25	0.54	0.36	0.09
United States	1981	0.07	2.33	0.67	1.38	0.36	0.06
Benin	1979	...	...	...	0.12	...	...
Cameroon	1981	0.07	0.15	0.06	0.17	...	0.02
Congo	1978	0.38	0.79	0.40	...	...	0.11
Kenya	1980	0.61	0.76	0.18	0.08	0.25	...
Liberia	1982	0.80	0.49	0.25	0.34	0.17	0.11
Mauritius	1980	0.59	1.21	0.85	...	0.55	0.23
Senegal	1976	0.03	0.23	0.11	0.15	0.13	0.07
South Africa	1982	0.14	0.16	0.07	...	0.14	0.03
Swaziland	1982	0.31	0.73	0.24	0.69	0.27	0.11
Tanzania	1978	...	...	...	0.36	...	...
Togo	1980	0.06	0.63	0.14	0.21	0.10	0.11
Uganda	1982	0.13	0.19	0.10	0.12	0.12	0.01
Zambia	1980	0.20	0.54	0.29	0.34	0.31	0.07
Zimbabwe	1979	0.22	0.18	0.14	0.35	0.25	0.01
India	1977	0.08	0.45	0.11	0.18	0.10	...
Korea	1981	0.17	0.70	0.02	1.69	0.39	0.01
Philippines	1979	...	0.59	...	...	...	...
Singapore	1981	0.10	0.80	0.64	2.58	0.53	0.31
Sri Lanka	1980	0.22	0.93	0.38	0.14	0.15	0.06
Cyprus	1980	0.18	0.85	0.34	2.77	0.59	0.18
Portugal	1977	...	...	...	0.90	...	...
Bahrain	1980	...	1.75	1.31	0.56	...	0.11
Oman	1980	1.60	1.07	0.52	2.13	...	0.04
Argentina	1981	0.09	1.83	0.36	0.43	0.72	0.07
Bahamas	1978	0.53	1.82	1.11	0.04	0.62	0.18
Belize	1981	0.18	0.24	0.35	...	0.29	0.12
Brazil	1979	...	0.96	...	...	...	...
Ecuador	1980	0.06	0.74	0.19	0.43	0.20	0.06
El Salvador	1982	0.11	0.64	0.34	0.23	0.07	0.09
Guatemala	1981	0.08	0.54	0.17	0.19	0.15	0.07
Jamaica	1980	0.33	0.94	0.52	0.10	0.34	0.03
Panama	1979	0.26	1.38	0.50	...	0.60	0.14
St. Lucia	1981	0.33	1.51	0.50	...	0.33	0.25
Uruguay	1979	...	...	...	1.03	...	...

Table 30 (concluded). Central Government Employees by Functional Sector per 100 Inhabitants[1]

Country	Year	Agriculture	Mining, Manufacturing, and Construction	Utilities	Transport and Communication	Posts	Labor and Social Security	Other
Belgium	1980	0.03	...	...	0.10	0.02	0.02	0.01
Canada	1981	0.07	0.01	0.05	0.10	0.26	0.08	0.22
Denmark	1981	...	...	...	1.20	...	...	
Germany, Fed. Rep. of	1980	0.01	0.01	.	0.03	—	—	0.01
Iceland	1980	0.18	0.09	...	0.13	...	0.04	0.04
Ireland	1978	0.29	0.14	...	0.04	0.77	0.11	...
Japan	1980	0.07	0.02	...	0.04	0.27	0.02	0.03
Netherlands	1980	0.08	0.14	...	0.18	...	0.21	0.14
New Zealand	1981	0.46	0.51	0.26	0.15	...	0.21	0.35
Sweden	1979	0.09	0.10	...	0.10	...	0.20	0.08
United States	1981	0.05	0.01	...	0.27	...	0.21	0.18
Cameroon	1981	0.03	0.01	...	0.03	...	—	0.03
Congo	1978	0.18	0.04	...	...	0.01	0.03	0.89
Kenya	1980	0.16	0.04	0.02	0.02	...	...	...
Liberia	1982	0.06	0.21	...	...	0.02	0.01	0.05
Mauritius	1980	0.87	0.74	...	0.19	0.05	0.10	0.02
Senegal	1976	0.08	0.05	...	0.01	...	...	0.03
South Africa	1982	0.07	...	0.06	0.01	...	0.01	—
Swaziland	1982	0.24	0.04	0.13	...	...	...	0.05
Togo	1980	0.12	0.03	—	—	0.06	0.01	0.08
Uganda	1982	0.15	0.08	0.03	0.01	...	0.01	0.05
Zambia	1980	0.27	0.32	...	0.08	...	0.02	0.01
Zimbabwe	1979	0.03	0.07	0.05	0.18	...	0.02	0.01
India	1977	–	0.07	...	0.31	0.11	...	0.02
Korea	1981	0.03	0.01	—	—	...	0.01	0.01
Singapore	1981	0.06	...	0.12	0.06	0.07	0.05	0.10
Sri Lanka	1980	0.12	0.07	0.03	0.21	0.20	0.03	0.18
Cyprus	1980	0.11	0.05	0.05	0.03	0.05	0.06	0.40
Bahrain	1980	0.11	0.33	0.67	0.22	0.06	0.11	1.00
Oman	1980	0.21	0.07	0.20	0.28	0.04	0.10	0.22
Argentina	1981	0.03	0.07	0.01	0.07	...	0.05	0.11
Bahamas	1978	0.09	0.22	...	0.13	0.09	0.04	0.18
Belize	1981	0.41	0.12	...	0.06	0.06	0.02	0.12
Ecuador	1980	0.10	0.01	0.01	0.11	...	0.03	...
El Salvador	1982	0.11	0.03	...	0.50	...	0.16	0.01
Guatemala	1981	0.05	0.08	...	...	...	0.09	0.01
Jamaica	1980	0.21	0.18	—	0.01	0.15	0.04	0.03
Panama	1979	0.18	0.31	...	0.08	0.08	0.07	0.09
St. Lucia	1981	0.33	0.08	...	0.25	0.25	...	0.08

[1]The number of employees in the police, health, and education sectors have been augmented by the number of such employees at the state and local government levels.

Table 31. Central Government Employees by Functional Sector as a Share of Total Central Government Employment[1]

(In percent)

Country	Year	Administration	Education	Health	Defense	Police	Finance and Planning
Austria	1979	...	...	...	4.15	...	...
Belgium	1980	4.28	52.87	5.77	13.32	6.05	7.19
Canada	1981	7.00	47.71	6.31	12.05	11.77	...
Denmark	1981	1.92	20.91	40.78	4.82	2.83	...
Germany, Fed. Rep. of	1980	0.75	36.40	16.31	19.84	13.25	1.97
Iceland	1980	6.45	30.65	44.35	...	4.84	4.84
Ireland	1978	8.75	34.91	0.23	10.68	7.12	0.39
Italy	1980	...	...	...	31.61	...	...
Japan	1980	4.97	45.76	7.86	10.46	11.31	0.96
Netherlands	1980	3.41	41.40	0.62	26.73	3.98	6.36
Sweden	1979	5.27	31.85	46.41	5.87	3.96	0.96
United States	1981	1.26	41.58	12.01	24.72	6.48	1.03
Benin	1979	...	...	...	15.75	...	...
Cameroon	1981	10.70	22.10	9.80	25.85	...	3.74
Congo	1978	14.51	30.61	15.30	...	...	4.22
Kenya	1980	28.80	35.99	8.56	3.77	11.86	...
Liberia	1982	33.13	20.12	10.37	14.23	7.11	4.67
Mauritius	1980	11.00	22.40	15.68	...	10.18	4.28
Senegal	1976	3.70	26.14	11.98	16.56	14.16	8.28
South Africa	1982	19.39	22.18	9.92	...	19.35	4.25
Swaziland	1982	9.24	21.74	7.07	20.65	8.15	3.26
Tanzania	1978	...	...	...	25.28	...	...
Togo	1980	3.73	41.54	9.45	13.93	6.22	7.21
Uganda	1982	13.27	19.24	9.55	12.39	12.24	1.09
Zambia	1980	8.13	22.03	11.61	13.90	12.58	2.71
Zimbabwe	1979	14.38	11.92	9.46	22.89	16.18	0.66
India	1977	6.06	34.76	8.66	13.66	7.42	...
Korea	1981	5.54	22.62	0.52	54.68	12.76	0.18
Philippines	1979	...	34.69	...	...	...	...
Singapore	1981	1.86	14.83	11.96	47.90	9.78	5.75
Sri Lanka	1980	8.19	34.12	13.93	5.07	5.37	2.32
Cyprus	1980	5.42	26.11	10.34	85.22	18.23	5.42
Bahrain	1980	...	28.00	20.89	8.89	...	1.78
Oman	1980	36.60	24.48	11.86	48.97	...	1.03
Argentina	1981	2.40	47.80	9.32	11.25	18.74	1.75
Bahamas	1978	10.71	36.61	22.32	0.89	12.50	3.57
Belize	1981	9.09	12.12	18.18	...	15.15	6.06
Ecuador	1980	3.18	37.66	9.74	22.23	10.29	3.00
El Salvador	1982	4.75	27.44	14.80	9.87	3.14	4.04
Guatemala	1981	5.71	37.52	11.81	13.33	10.57	4.86
Jamaica	1980	11.55	32.44	17.88	3.32	11.71	1.11
Panama	1979	7.69	40.66	14.76	...	17.74	4.24
St. Lucia	1981	8.70	39.13	13.04	...	8.70	6.52

Table 31 (concluded). Central Government Employees by Functional Sector as a Share of Total Central Government Employment[1]

(In percent)

Country	Year	Agriculture	Mining, Manufacturing, and Construction	Utilities	Transport and Communication	Posts	Labor and Social Security	Other
Belgium	1980	0.46	.	.	1.75	0.39	0.39	0.09
Canada	1981	1.92	0.20	1.23	2.76	6.90	2.12	5.87
Denmark	1981	.	.	0.03	9.14	.	.	.
Germany, Fed. Rep. of	1980	0.20	0.24	.	0.75	.	0.10	0.15
Iceland	1980	3.23	1.61	.	2.42	. . .	0.81	0.81
Ireland	1978	7.35	3.48	. .	0.93	19.81	2.71	.
Japan	1980	2.92	0.88	. .	1.49	11.09	0.90	1.40
Netherlands	1980	1.97	3.31	.	4.10	. .	4.75	3.36
Sweden	1979	0.95	1.11	.	1.13	. .	2.19	0.86
United States	1981	0.89	0.14	0.06	4.81	.	3.75	3.27
Cameroon	1981	5.17	1.43	.	4.28	. .	0.36	3.92
Congo	1978	6.86	1.58	.	. .	0.53	1.32	34.30
Kenya	1980	7.63	2.03	1.13	0.99	. . .	. .	. . .
Liberia	1982	2.44	8.54	. .	. . .	1.02	0.41	2.03
Mauritius	1980	16.09	13.65	. .	3.46	1.02	1.83	0.41
Senegal	1976	8.93	5.88	. .	1.09	. . .	. . .	3.49
South Africa	1982	10.26	0.64	9.23	2.10	. . .	2.00	0.68
Swaziland	1982	7.07	1.09	3.80	. . .	. . .	. . .	1.63
Togo	1980	7.71	1.99	0.25	0.25	3.73	0.75	5.22
Uganda	1982	14.65	8.24	3.06	0.51	. .	0.66	5.10
Zambia	1980	10.84	12.86	. .	3.34	. . .	0.97	0.35
Zimbabwe	1979	2.18	4.82	3.31	11.83	. . .	1.32	0.95
India	1977	0.09	5.07	0.09	24.12	8.37	. . .	1.72
Korea	1981	0.89	0.31	0.03	0.11	. . .	0.19	0.40
Singapore	1981	1.09	. . .	2.17	1.16	1.24	1.01	1.79
Sri Lanka	1980	4.42	2.57	1.15	7.59	7.49	1.12	6.64
Cyprus	1980	3.45	1.48	1.48	0.99	1.48	1.97	12.32
Bahrain	1980	1.78	5.33	10.67	3.56	0.89	1.78	16.00
Oman	1980	4.90	1.55	4.64	6.44	1.03	2.32	5.15
Argentina	1981	0.80	1.72	0.38	1.75	. . .	1.31	2.80
Bahamas	1978	1.79	4.46	. .	2.68	1.79	0.89	3.57
Belize	1981	21.21	6.06	. . .	3.03	3.03	1.21	6.06
Ecuador	1980	5.27	0.61	0.73	5.88	. . .	1.35	. . .
El Salvador	1982	4.84	1.43	. . .	21.61	. . .	6.82	0.36
Guatemala	1981	3.62	5.62	. . .	. . .	. . .	6.10	0.67
Jamaica	1980	7.12	6.33	0.16	0.47	5.22	1.42	1.11
Panama	1979	5.18	9.11	. . .	2.35	2.35	2.04	2.51
St. Lucia	1981	8.70	2.17	. . .	6.52	6.52	. . .	2.17

[1]Both the total number of central government employees and the number of employees in the police, health, and education sectors have been augmented by the number of employees in these three sectors at the state and local government levels.

Table 32. Index of Average Salary per Employee in Different Functional Sectors Relative to Average Central Government Wage

(Average central government wage = 100)

Country	Year	Country Standard Deviation	Administration	Education	Health	Defense	Police	Finance and Planning
Canada	1981	8.3	101.0	107.9	100.1	99.1	108.6	...
Iceland	1980	47.2	126.8	97.7	80.7	...	155.0	206.2
Japan	1980	20.8	126.4	112.0	105.1	80.5	80.5	98.7
New Zealand	1981	15.5	89.7	100.9	103.5	116.1	116.0	89.9
Sweden	1979	...	...	...	392.3	...	...	...
United States	1981	18.8	141.1	137.0	132.8	89.7	...	120.9
Kenya	1980	25.8	126.2	97.1	135.2	130.4	102.7	...
Liberia	1982	33.0	66.1	113.3	111.2	96.3	78.8	117.2
Mauritius	1980	105.5	100.1	112.2	116.3	...	143.7	158.8
South Africa	1982	21.5	75.3	54.0	40.5	...	60.3	68.1
Swaziland	1982	40.9	162.4	119.4	114.3	42.8	99.1	141.5
Togo	1980	49.5	234.7	78.3	110.3	9.1	81.4	122.6
Uganda	1982	67.0	123.9	146.4	53.1	152.6	84.8	248.8
Zambia	1980	38.5	129.9	145.9	102.0	134.0	60.2	79.3
Zimbabwe	1979	53.6	105.0	147.5	78.4	94.6	99.7	136.9
India	1977	...	...	...	...	113.7	...	...
Korea	1981	42.2	162.7	222.1	170.9	52.2	169.7	136.8
Singapore	1981	48.2	186.6	148.6	102.1	...	101.6	123.1
Sri Lanka	1980	40.1	141.0	148.3	111.0	114.0	107.9	116.9
Cyprus	1980	42.5	162.7	119.2	24.0	...	97.5	122.0
Bahrain	1980	109.3	...	81.3	78.1	...	...	394.0
Oman	1980	22.0	69.9	64.1	59.6	67.1	...	132.8
Argentina	1981	85.1	141.1	60.7	81.4	139.8	106.2	128.5
Bahamas	1978	20.5	135.9	96.5	85.1	118.1	92.0	67.9
Belize	1981	18.9	104.5	112.0	84.6	...	80.6	126.9
Ecuador	1980	22.4	131.4	114.9	86.2	104.6	50.7	92.6
El Salvador	1982	24.4	139.3	124.1	100.2	104.2	93.0	121.3
Jamaica	1980	61.2	75.6	97.0	72.2	109.3	91.4	250.6
Panama	1979	58.6	144.0	93.6	97.1	...	70.6	102.5
St. Lucia	1981	26.4	117.6	103.8	108.9	...	98.0	117.6

		Agriculture	Mining, Manufacturing, and Construction	Utilities	Transport and Communication	Posts	Labor and Social Security	Other
Canada	1981	105.7	104.9	120.3	106.3	...	86.2	108.3
Iceland	1980	120.8	125.2	...	97.9	...	38.1	...
Japan	1980	131.2	107.4	...	58.2	95.4	117.0	108.2
New Zealand	1981	83.1	95.3	75.5	105.6	...	74.7	119.7
United States	1981	119.9	126.7	134.8	168.0	...	123.6	124.8
Kenya	1980	100.7	146.5	175.3	146.6	...	...	...
Liberia	1982	177.6	111.2	...	...	87.7	141.0	153.6
Mauritius	1980	43.8	65.0	...	28.8	377.2	131.2	296.9
South Africa	1982	44.6	103.5	31.5	59.0	...	65.4	92.0
Swaziland	1982	152.4	123.8	192.1	...	...	...	153.3
Togo	1980	105.8	116.0	98.8	69.9	95.1	101.0	123.0
Uganda	1982	61.7	58.5	1.1	153.8	...	52.5	64.5
Zambia	1980	68.3	59.2	...	25.8	...	122.4	69.5
Zimbabwe	1979	188.5	70.3	46.4	28.3	...	208.4	112.5
Korea	1981	131.4	147.3	...	153.4	...	150.5	109.0
Singapore	1981	84.4	...	245.2	124.8	82.9	113.6	117.3
Sri Lanka	1980	101.5	116.5	242.9	114.4	101.5	103.4	77.5
Cyprus	1980	95.9	130.5	93.2	125.8	83.9	97.9	81.6
Bahrain	1980	98.5	41.5	121.0	93.3	...	67.4	31.7
Oman	1980	64.7	97.8	69.9	60.4	69.9	62.1	51.7
Argentina	1981	184.3	96.6	389.5	110.7	...	133.8	100.4
Bahamas	1978	94.5	108.7	...	110.3	94.5	70.9	124.1
Belize	1981	83.2	89.6	...	104.5	59.7	74.7	97.1
Ecuador	1980	94.6	115.6	113.2	77.8	...	82.2	...
El Salvador	1982	101.3	72.4	...	60.4	...	90.8	132.5
Jamaica	1980	45.7	18.4	184.1	86.6	49.9	75.8	65.0
Panama	1979	80.5	75.5	...	50.8	58.1	82.1	261.4
St. Lucia	1981	75.1	143.8	...	82.8	...	...	156.8

Table 33. IGEM Indices and Predicted Level of Employment by Key Functional Sector

(Predicted employment per hundred inhabitants)

		Administration		Education		Health	
Country	Year	IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Australia	1980		0.26		1.77		0.96
Austria	1979		0.30		1.76		1.00
Belgium	1980	82	0.29	175	1.81	31	1.03
Canada	1981	115	0.23	98	1.84	24	0.99
Denmark	1981	75	0.34	144	1.91	361	1.48
Finland	1979		0.34		1.91		1.49
France	1980		0.18		1.83		0.93
Germany, Fed. Rep. of	1980	16	0.17	71	1.87	62	0.95
Iceland	1980	67	0.53	97	1.73	202	1.20
Ireland	1978	103	0.33	99	1.38	1	0.74
Italy	1980	. . .	0.16	. . .	1.59	. . .	0.73
Japan	1980	97	0.12	63	1.78	23	0.84
Luxembourg	1979	. . .	0.50	. . .	1.83	. . .	1.25
Netherlands	1980	53	0.28	98	1.99	2	1.48
New Zealand	1981	133	0.35	. . .	1.65	. . .	0.96
Norway	1979	. . .	0.36	. . .	2.01	. . .	1.58
Spain	1979	. . .	0.18	. . .	1.52	. . .	0.70
Sweden	1979	153	0.32	141	2.06	269	1.58
Switzerland	1979	. . .	0.32	. . .	1.95	. . .	1.17
United Kingdom	1980	. . .	0.18	. . .	1.94	. . .	1.36
United States	1981	83	0.08	127	1.84	80	0.84
Benin	1979	. . .	0.28	. . .	0.57	. . .	0.58
Botswana	1979	. . .	0.39	. . .	0.72	. . .	0.29
Burundi	1978	. . .	0.23	. . .	0.01	. . .	—
Cameroon	1981	31	0.23	22	0.67	65	0.10
Central African Rep.	1979	. . .	0.30	. . .	0.33	. . .	—
Congo	1978	107	0.35	97	0.82	59	0.67
Ethiopia	1977	. . .	0.12	. . .	0.20	. . .	0.14
Ghana	1979	. . .	0.22	. . .	0.84	. . .	0.39
Kenya	1980	351	0.17	164	0.46	400	—
Liberia	1982	253	0.32	83	0.58	206	0.12
Madagascar	1980	. . .	0.22	. . .	0.49	. . .	0.29
Malawi	1979	. . .	0.22	. . .	0.20	. . .	—
Mauritius	1980	156	0.38	151	0.80	242	0.35
Morocco	1979	. . .	0.18	. . .	0.76	. . .	0.12
Senegal	1976	13	0.26	41	0.57	27	0.39
Sierra Leone	1979	. . .	0.27	. . .	0.30	. . .	—
South Africa	1982	72	0.19	12	1.34	9	0.73
Sudan	1978	. . .	0.18	. . .	0.64	. . .	0.37
Swaziland	1982	75	0.41	90	0.81	61	0.39
Tanzania	1978	. . .	0.17	. . .	0.53	. . .	0.45
Togo	1980	19	0.30	111	0.57	33	0.43
Tunisia	1978	. . .	0.27	. . .	1.00	. . .	0.73
Uganda	1982	92	0.15	400	—	400	—
Zaire	1978	. . .	0.13	. . .	0.25	. . .	—
Zambia	1980	76	0.26	67	0.81	49	0.58
Zimbabwe	1979	92	0.24	28	0.64	55	0.26
Bangladesh	1979	. . .	0.04	. . .	—	. . .	—
India	1977	400	—	208	0.22	400	—
Korea	1981	136	0.13	116	0.60	400	—
Malaysia	1980	. . .	0.22	. . .	0.99	. . .	0.34
Pakistan	1979	. . .	0.06	. . .	0.34	. . .	—
Philippines	1979	. . .	0.12	93	0.64	. . .	—
Singapore	1981	27	0.37	50	1.61	58	1.12
Sri Lanka	1980	133	0.17	371	0.25	400	—
Thailand	1979	. . .	0.11	. . .	0.61	. . .	—
Cyprus	1980	40	0.44	66	1.29	43	0.78
Greece	1978	. . .	0.26	. . .	1.33	. . .	0.63
Portugal	1977	. . .	0.25	. . .	1.19	. . .	0.86
Turkey	1979	. . .	0.14	. . .	1.05	. . .	0.47
Bahrain	1980	. . .	0.51	95	1.84	91	1.43
Egypt	1979	. . .	0.13	. . .	0.66	. . .	0.33
Israel	1979	. . .	0.33	. . .	1.49	. . .	1.16
Jordan	1979	. . .	0.30	. . .	0.71	. . .	0.20
Oman	1980	363	0.44	62	1.72	36	1.44

Table 33 (continued). IGEM Indices and Predicted Level of Employment by Key Functional Sector

(Predicted employment per hundred inhabitants)

Country	Year	Administration		Education		Health	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Argentina	1981	48	0.49	137	1.34	48	0.74
Bahamas	1978	105	0.51	131	1.39	120	0.93
Barbados	1981	. . .	0.50	. . .	1.32	. . .	0.86
Belize	1981	36	0.49	30	0.79	78	0.45
Brazil	1979	. . .	0.08	95	1.01	. . .	0.38
Chile	1979	. . .	0.24	. . .	1.06	. . .	0.40
Colombia	1980	. . .	0.16	. . .	0.87	. . .	0.19
Costa Rica	1978	. . .	0.34	. . .	1.02	. . .	0.47
Ecuador	1980	25	0.25	78	0.94	58	0.33
El Salvador	1982	42	0.27	95	0.67	251	0.14
Guatemala	1981	33	0.25	64	0.85	66	0.26
Guyana	1979	. . .	0.38	. . .	0.77	. . .	0.67
Honduras	1981	. . .	0.29	. . .	0.83	. . .	0.62
Jamaica	1980	98	0.34	88	1.07	61	0.85
Mexico	1979	. . .	0.12	. . .	1.19	. . .	0.56
Nicaragua	1976	. . .	0.32	. . .	0.73	. . .	0.23
Panama	1979	74	0.35	129	1.07	72	0.69
St. Lucia	1981	62	0.54	127	1.19	34	1.47
Trinidad and Tobago	1980	. . .	0.41	. . .	1.55	. . .	0.95
Uruguay	1979	. . .	0.34	. . .	1.33	. . .	1.04

		Defense		Police		Finance and Planning	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Australia	1980	. . .	0.75	. . .	0.40	. . .	0.12
Austria	1979	21	0.75	. . .	0.42	. . .	0.13
Belgium	1980	98	0.75	79	0.42	300	0.13
Canada	1981	61	0.75	111	0.40	. . .	0.11
Denmark	1981	78	0.81	95	0.39	. . .	0.15
Finland	1979	85	0.81	. . .	0.39	. . .	0.15
France	1980	75	0.75	. . .	0.38	. . .	0.09
Germany, Fed. Rep. of	1980	96	0.75	126	0.38	79	0.09
Iceland	1980	. . .	0.75	53	0.50	123	0.22
Ireland	1978	57	0.73	72	0.39	12	0.13
Italy	1980	126	0.74	. . .	0.35	. . .	0.08
Japan	1980	34	0.75	78	0.36	33	0.07
Luxembourg	1979	. . .	0.75	. . .	0.50	. . .	0.21
Netherlands	1980	141	0.82	46	0.38	210	0.13
New Zealand	1981	70	0.74	. . .	0.42	11	0.15
Norway	1979	. . .	0.82	. . .	0.41	. . .	0.16
Spain	1979	38	0.74	. . .	0.35	. . .	0.08
Sweden	1979	66	0.82	91	0.40	60	0.15
Switzerland	1979	. . .	0.75	. . .	0.45	. . .	0.15
United Kingdom	1980	. . .	0.82	. . .	0.34	. . .	0.09
United States	1981	182	0.76	104	0.35	98	0.06
Benin	1979	26	0.46	. . .	0.19	. . .	0.07
Botswana	1979	. . .	0.64	. . .	0.33	. . .	0.12
Burundi	1978	. . .	0.04	. . .	0.20	. . .	0.04
Cameroon	1981	31	0.55	. . .	0.27	39	0.06
Central African Rep.	1979	. . .	0.38	. . .	0.26	. . .	0.07
Congo	1978	. . .	0.61	. . .	0.27	99	0.11
Ethiopia	1977	. . .	—	. . .	0.09	. . .	—
Ghana	1979	. . .	0.57	. . .	0.26	. . .	0.07
Kenya	1980	17	0.46	111	0.23	. . .	0.03
Liberia	1982	66	0.52	59	0.29	123	0.09
Madagascar	1980	. . .	0.44	. . .	0.19	. . .	0.05
Malawi	1979	. . .	0.27	. . .	0.21	. . .	0.04
Mauritius	1980	. . .	0.66	162	0.34	185	0.12
Morocco	1979	. . .	0.65	. . .	0.26	. . .	0.05
Senegal	1976	28	0.53	60	0.21	113	0.07
Sierra Leone	1979	. . .	0.36	. . .	0.24	. . .	0.06
South Africa	1982	. . .	0.76	45	0.30	40	0.07
Sudan	1978	. . .	0.53	. . .	0.19	. . .	0.04
Swaziland	1982	134	0.52	77	0.35	80	0.14
Tanzania	1978	85	0.43	. . .	0.15	. . .	0.03
Togo	1980	43	0.50	42	0.23	136	0.08
Tunisia	1978	. . .	0.66	. . .	0.26	. . .	0.09
Uganda	1982	400	—	87	0.14	400	—
Zaïre	1978	. . .	0.26	. . .	0.16	. . .	0.01
Zambia	1980	57	0.61	130	0.24	86	0.08
Zimbabwe	1979	57	0.62	103	0.24	16	0.06

Table 33 (continued). IGEM Indices and Predicted Level of Employment by Key Functional Sector

(Predicted employment per hundred inhabitants)

Country	Year	Defense		Police		Finance and Planning	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Bangladesh	1979	. . .	. . .	. . .	0.09	. . .	. . .
India	1977	59	0.30	126	0.08	. . .	. . .
Korea	1981	301	0.56	176	0.22	24	0.02
Malaysia	1980	. . .	0.06	. . .	0.30	. . .	0.07
Pakistan	1979	. . .	0.30	. . .	0.14	. . .	. . .
Philippines	1979	. . .	0.84	. . .	0.22	. . .	0.02
Singapore	1981	334	0.77	133	0.40	206	0.15
Sri Lanka	1980	38	0.39	73	0.20	267	0.02
Thailand	1979	. . .	0.49	. . .	0.22	. . .	0.02
Cyprus	1980	380	0.73	143	0.42	107	0.16
Greece	1978	. . .	0.73	. . .	0.36	. . .	0.10
Portugal	1977	118	0.77	. . .	0.28	. . .	0.09
Turkey	1979	. . .	0.73	. . .	0.25	. . .	0.05
Bahrain	1980	88	0.63	. . .	0.47	53	0.21
Egypt	1979	. . .	0.58	. . .	0.17	. . .	0.02
Israel	1979	. . .	0.80	. . .	0.34	. . .	0.13
Jordan	1979	. . .	0.49	. . .	0.30	. . .	0.09
Oman	1980	277	0.77	. . .	0.41	25	0.18
Argentina	1981	67	0.65	238	0.30	88	0.08
Bahamas	1978	6	0.73	137	0.45	91	0.20
Barbados	1981	. . .	0.73	. . .	0.44	. . .	0.19
Belize	1981	. . .	0.68	78	0.38	72	0.16
Brazil	1979	. . .	0.72	. . .	0.22	. . .	0.02
Chile	1979	. . .	0.59	. . .	0.32	. . .	0.08
Colombia	1980	. . .	0.67	. . .	0.27	. . .	0.05
Costa Rica	1978	. . .	0.70	. . .	0.35	. . .	0.12
Ecuador	1980	75	0.58	66	0.31	73	0.08
El Salvador	1982	39	0.59	26	0.28	122	0.08
Guatemala	1981	29	0.67	52	0.30	90	0.08
Guyana	1979	. . .	0.67	. . .	0.28	. . .	0.12
Honduras	1981	. . .	0.57	. . .	0.25	. . .	0.09
Jamaica	1980	13	0.75	114	0.30	27	0.12
Mexico	1979	. . .	0.71	. . .	0.26	. . .	0.04
Nicaragua	1976	. . .	0.61	. . .	0.31	. . .	0.10
Panama	1979	. . .	0.62	182	0.33	117	0.12
St. Lucia	1981	. . .	0.84	103	0.32	132	0.19
Trinidad and Tobago	1980	. . .	0.74	. . .	0.44	. . .	0.17
Uruguay	1979	154	0.67	. . .	0.33	. . .	0.13

		Agriculture		Mining, Manufacturing, and Construction		Utilities		Labor and Social Security	
		IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Australia	1980	. . .	0.10	. . .	0.11	. . .	0.13	. . .	0.09
Austria	1979	. . .	0.12	. . .	0.13	. . .	0.15	. . .	0.09
Belgium	1980	23	0.11	. . .	0.12	. . .	0.15	22	0.10
Canada	1981	97	0.07	8	0.10	42	0.11	84	0.10
Denmark	1981	. . .	0.12	. . .	0.11	3	0.13	400	0.10
Finland	1979	. . .	0.12	. . .	0.11	. . .	0.13	. . .	0.10
France	1980	. . .	0.05	. . .	0.07	. . .	0.08	. . .	0.09
Germany, Fed. Rep. of	1980	19	0.04	13	0.07	. . .	0.08	4	0.10
Iceland	1980	70	0.25	37	0.24	. . .	0.29	47	0.09
Ireland	1978	179	0.16	89	0.15	. . .	0.16	142	0.07
Japan	1980	400	0.02	47	0.05	. . .	0.05	24	0.09
Luxembourg	1979	. . .	0.23	. . .	0.23	. . .	0.27	. . .	0.10
Netherlands	1980	108	0.08	186	0.08	. . .	0.10	203	0.10
New Zealand	1981	294	0.16	324	0.16	145	0.18	243	0.09
Norway	1979	. . .	0.12	. . .	0.12	. . .	0.15	. . .	0.10
Spain	1979	. . .	0.07	. . .	0.08	. . .	0.07	. . .	0.08
Sweden	1979	90	0.10	107	0.09	. . .	0.12	191	0.10
Switzerland	1979	. . .	0.12	. . .	0.14	. . .	0.17	. . .	0.10
United Kingdom	1980	. . .	0.03	. . .	0.03	. . .	0.04	. . .	0.10
United States	1981	400	—	31	0.03	13	0.03	223	0.09

Table 33 (concluded). IGEM Indices and Predicted Level of Employment by Key Functional Sector

(Predicted employment per hundred inhabitants)

		Agriculture		Mining, Manufacturing, and Construction		Utilities		Labor and Social Security	
Country	Year	IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment	IGEM index	Predicted employment
Benin	1979	. . .	0.16	. . .	0.09	. . .	0.02	. . .	0.03
Botswana	1979	. . .	0.23	. . .	0.19	. . .	0.16	. . .	0.04
Burundi	1978	. . .	0.18	. . .	0.13	. . .	0.05	. . .	0.01
Cameroon	1981	24	0.14	8	0.12	. . .	0.07	6	0.04
Central African Rep.	1979	. . .	0.20	. . .	0.16	. . .	0.10	. . .	0.02
Congo	1978	93	0.19	30	0.14	. . .	0.10	77	0.04
Ethiopia	1977	. . .	0.09	. . .	0.02	. . .	—	. . .	0.01
Ghana	1979	. . .	0.12	. . .	0.09	. . .	0.05	. . .	0.05
Kenya	1980	131	0.12	46	0.09	85	0.03	. . .	0.03
Liberia	1982	30	0.20	129	0.16	. . .	0.12	28	0.04
Madagascar	1980	. . .	0.13	. . .	0.08	. . .	0.01	. . .	0.03
Malawi	1979	. . .	0.17	. . .	0.12	. . .	0.05	. . .	0.02
Mauritius	1980	390	0.22	392	0.19	. . .	0.16	212	0.05
Morocco	1979	. . .	0.11	. . .	0.09	. . .	0.04	. . .	0.04
Senegal	1976	53	0.15	57	0.09	. . .	0.03	. . .	0.03
Sierra Leone	1979	. . .	0.19	. . .	0.14	. . .	0.08	. . .	0.02
South Africa	1982	98	0.07	7	0.07	145	0.04	20	0.07
Sudan	1978	. . .	0.10	. . .	0.06	. . .	—	. . .	0.03
Swaziland	1982	98	0.24	18	0.20	69	0.18	. . .	0.05
Tanzania	1978	. . .	0.10	. . .	0.04	. . .	—	. . .	0.03
Togo	1980	67	0.18	27	0.11	6	0.06	36	0.03
Tunisia	1978	. . .	0.13	. . .	0.09	. . .	0.06	. . .	0.05
Uganda	1982	102	0.14	91	0.09	400	—	400	—
Zaire	1978	. . .	0.10	. . .	0.06	. . .	—	. . .	0.02
Zambia	1980	191	0.14	346	0.09	. . .	0.05	55	0.04
Zimbabwe	1979	23	0.14	72	0.10	101	0.05	56	0.04
Bangladesh	1979	. . .	0.06	. . .	0.02	. . .	—	. . .	—
India	1977	400	—	400	—	400	—	. . .	0.01
Korea	1981	32	0.09	14	0.07	20	0.01	17	0.03
Malaysia	1980	. . .	0.12	. . .	0.11	. . .	0.07	. . .	0.05
Pakistan	1979	. . .	0.06	. . .	0.02	. . .	—	. . .	0.02
Philippines	1979	. . .	0.08	. . .	0.06	. . .	—	. . .	0.04
Singapore	1981	36	0.16	. . .	0.15	73	0.16	64	0.08
Sri Lanka	1980	92	0.13	74	0.09	185	0.02	173	0.02
Thailand	1979	. . .	0.08	. . .	0.06	. . .	—	. . .	0.03
Cyprus	1980	50	0.23	23	0.21	22	0.21	90	0.07
Greece	1978	. . .	0.12	. . .	0.12	. . .	0.11	. . .	0.07
Portugal	1977	. . .	0.11	. . .	0.08	. . .	0.05	. . .	0.06
Turkey	1979	. . .	0.06	. . .	0.05	. . .	0.01	. . .	0.05
Bahrain	1980	49	0.23	159	0.21	266	0.25	114	0.10
Egypt	1979	. . .	0.07	. . .	0.03	. . .	—	. . .	0.03
Israel	1979	. . .	0.14	. . .	0.11	. . .	0.11	. . .	0.08
Jordan	1979	. . .	0.18	. . .	0.15	. . .	0.11	. . .	0.04
Oman	1980	113	0.19	42	0.16	110	0.18	113	0.09
Argentina	1981	40	0.08	97	0.07	30	0.05	72	0.07
Bahamas	1978	34	0.26	93	0.24	. . .	0.26	58	0.08
Barbados	1981	. . .	0.26	. . .	0.23	. . .	0.25	. . .	0.07
Belize	1981	144	0.29	49	0.24	. . .	0.23	49	0.05
Brazil	1979	. . .	0.03	. . .	0.02	. . .	—	. . .	0.05
Chile	1979	. . .	0.12	. . .	0.11	. . .	0.09	. . .	0.06
Colombia	1980	. . .	0.09	. . .	0.08	. . .	0.04	. . .	0.05
Costa Rica	1978	. . .	0.19	. . .	0.16	. . .	0.15	. . .	0.06
Ecuador	1980	76	0.14	10	0.12	16	0.09	50	0.05
El Salvador	1982	69	0.16	25	0.13	. . .	0.09	400	0.04
Guatemala	1981	36	0.14	66	0.12	. . .	0.09	185	0.05
Guyana	1979	. . .	0.21	. . .	0.15	. . .	0.12	. . .	0.04
Honduras	1981	. . .	0.16	. . .	0.11	. . .	0.06	. . .	0.04
Jamaica	1980	120	0.17	146	0.13	5	0.10	73	0.06
Mexico	1979	. . .	0.04	. . .	0.04	. . .	—	. . .	0.06
Nicaragua	1976	. . .	0.19	. . .	0.16	. . .	0.12	. . .	0.04
Panama	1979	96	0.18	207	0.15	. . .	0.13	119	0.06
St. Lucia	1981	127	0.26	46	0.18	. . .	0.17	. . .	0.06
Trinidad and Tobago	1980	. . .	0.20	. . .	0.19	. . .	0.21	. . .	0.08
Uruguay	1979	. . .	0.15	. . .	0.12	. . .	0.11	. . .	0.07

Chart 2. New Zealand, Belgium, the Netherlands, Sweden, and the United Kingdom: Lorenz Curve of Government Salary Structure

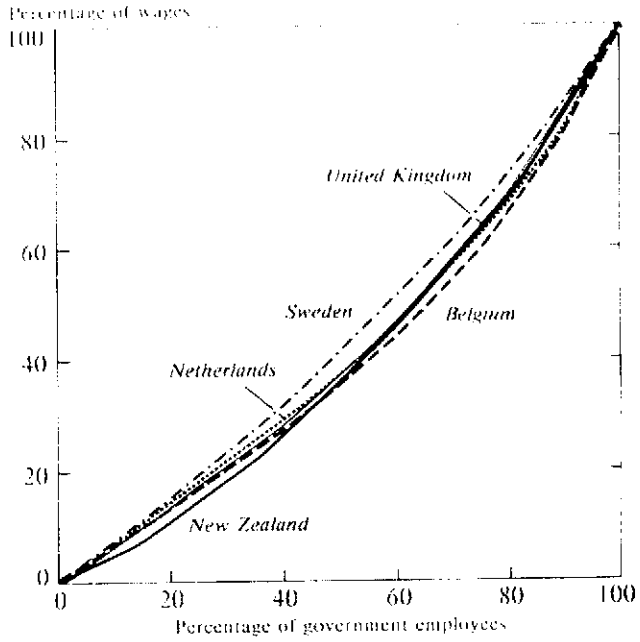


Chart 4. Korea and Sri Lanka: Lorenz Curve of Government Salary Structure

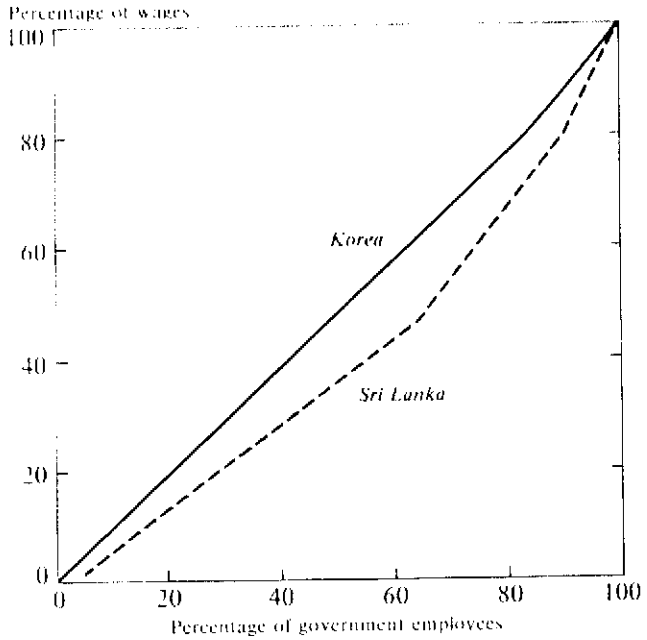


Chart 3. Kenya, Senegal, and Swaziland: Lorenz Curve of Government Salary Structure

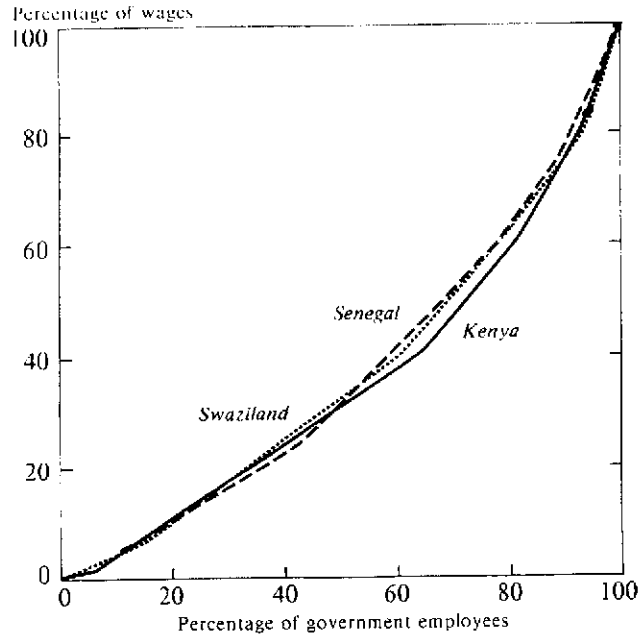
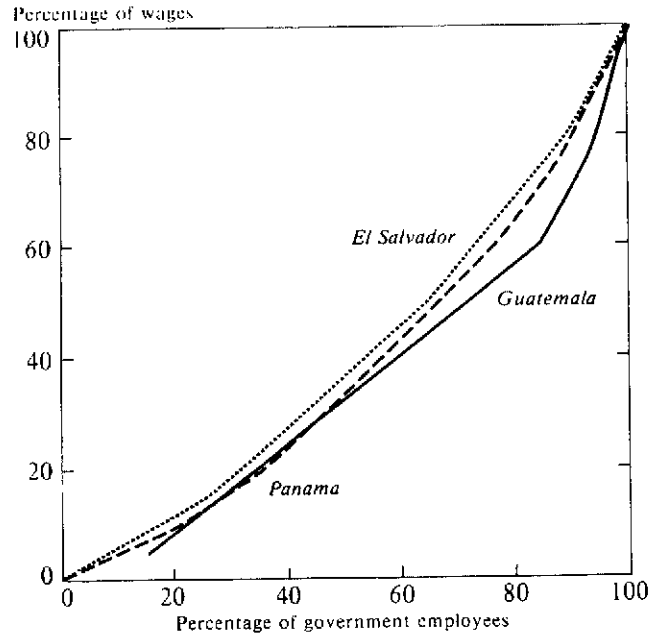


Chart 5. Guatemala, Panama, and El Salvador: Lorenz Curve of Government Salary Structure



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[3]Nonfinancial public enterprises include "enterprise special accounts" of the central government, e.g., National Railroad. "Wages" include allowances. "Employment" includes "nonregular" employment.

[4]The Netherlands presented an unusual situation in terms of designation of employees in certain functional categories, notably health, transport, and education. Employment statistics place the Government in the so-called quaternary sector, along with other functions—health, education, transport, and other services—that are partly or entirely financed by the general government, and whose employment conditions are determined by the Government. Based on the nature of the institutions involved, it was decided to include education employees (100 percent financed by the general government) as part of general government, but to exclude those in health and transport (76 percent and 59 percent, respectively, financed by general government), other than those engaged in administration within a ministry.

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