



**Group of Experts on the United Nations Programme
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Public sector indicators**Report prepared by the Secretariat****Introduction**

1. The Fourteenth Meeting of Experts on the United Nations Programme in Public Administration and Finance recommended that “the United Nations Programme in Public Administration and Finance elaborate a framework for the collection of internationally comparable data.” (E/1998/77, para. 26). This paper is a response to that request. It attempts to answer four questions: (a) How can the size of the public sector be measured in theory? (b) How can it be measured in fact, given the constraints of existing data? (c) What accounts for observed variation in the size of the public sector? (d) What type of data can provide a reasonable picture of the public sector in a given country? Focus is on the past decade, specifically on the beginning of that decade (1990) and on the year 1997, the latest year for which data are currently available for a broad range of countries.

1. Conceptual framework

2. What does it mean to say that the public sector of one country is larger than that of another, or that the public sector in a particular country has increased in size over time? The public sector is the embodiment of the state, so to answer this question one must first clarify the meaning of the word “state”.

3. In no country is it legal for individuals, acting in their own self-interest, to force others to do something against their will. In many countries citizens are allowed to organize business firms, trade unions or religious societies, but these institutions rely, for the most part, on the market and on persuasion to recruit members and to influence the behaviour of others. Large corporations such as General Motors (or Volkswagen or Toyota) offer automobiles for sale. They persuade, or attempt to persuade, with advertising, but there is no way they can force consumers to purchase these products. Market transactions are voluntary, as is participation in civic and social causes. Individuals purchase goods or services only if they find the cost to be less than the satisfaction or utility they expect to derive from them. And they join a firm, church or sporting club only if it is in their interest to do so.

4. The state is different. It is not a voluntary organization. It is concerned not with maximization of profit or utility, but with public policy. More importantly, it enjoys a monopoly of legitimate force, limited perhaps by democratic tradition, a written constitution or a bill of rights. The state is able to (a) impose regulations on and collect taxes from other sectors of the economy; (b) produce goods and services that it can either sell in the market or supply free of charge to individuals and the community; and

(c) distribute funds through transfers. We examine each of these forms of state intervention under five headings: regulation, taxation, production, consumption and cash transfers.

5. **The state as regulator.** The state is able to regulate economic activities in myriad ways that affect virtually everyone. There are many examples. The state establishes and enforces standards regarding health, safety, hours of work, minimum wages and emission of pollutants. It issues and limits the number of licences for taxis, restaurants, hairdressers, radio stations and countless other businesses. It establishes quotas for the import and export of specific products. It requires automobile drivers to purchase liability insurance and workers to save for their old age.

6. It is extremely difficult to quantify the extent of this regulation of economic activity. It is possible to count the number of regulatory laws that are in effect, and some researchers have. But the number of laws may bear little relation to the extent of regulation. An alternative is to estimate the amount of economic activity that is subject to regulation, but this measures the size of the formal, as opposed to informal, sector of an economy. Such a statistic would not allow us to rank countries by degree of regulation nor measure changes in the extent of regulation over time. Indeed, the relationship between regulation and formality is not necessarily positive, for onerous regulations encourage growth of the informal sector! In sum, even though regulation is an important function of states, it is virtually impossible to measure in any meaningful way and it will be ignored in the remainder of the present report.

7. **The state as tax collector.** Without tax revenue, a state cannot survive. It can order its central bank to print money, but that is a form of taxation since the resulting inflation erodes the real value of cash balances held by the public. The state can also finance its expenditures by borrowing, but it is the capacity to collect taxes in the future that gives it access to capital markets today.

8. The amount of taxes collected is determined by expenditure requirements, at least in the long run. But the state profoundly affects the economy and the distribution of income by the way in which it collects taxes. Groups of citizens or particular activities are favoured when they are exempted from payment of taxes. These “tax expenditures” give the illusion that

the state is smaller in terms of revenue or expenditure, and distorts intercountry comparisons. To cite a simple example, governments typically allow taxpayers an income tax deduction for each dependent child. A number of European countries provide, in addition, generous monthly payments to the family of each child, with the result that government expenditure and taxation is larger than it would be if the state relied solely on income tax deductions. Another example is subsidies given to homeowners by allowing for the deduction of mortgage interest payments. All things being equal, one would like to conclude that the state is larger with this preferential treatment of homeowners over renters. Yet, because the mortgage interest deduction is tax expenditure rather than a cash subsidy, it does not show up as increased government expenditure or taxation. Other examples are the tax concessions granted to firms that locate in a specific area, export certain products or behave in other ways desired by the state.

9. It would be informative to sum all tax expenditures in each country for purposes of comparison. Unfortunately such data are collected in few countries. Tax expenditure, unlike regulation, is simple to measure; nonetheless it is seldom done.

10. **The state as producer.** A third function of the state is production of goods and services. Those destined for final consumption are either sold or distributed without charge to residents. The System of National Accounts (SNA) distinguishes between these two types of production and refers to them as market and non-market activities (see figure 1). Goods and services sold on the market are regarded as output of public corporations, not government. They are valued at market prices, even if these prices are less than cost. Examples are publicly owned telecommunications, railways, electric utilities and postal services. Goods and services which are produced by employees of the state and distributed without charge (or “at prices which are not economically significant”) are deemed to be the output of general government. This includes the activities of government ministries, but it also includes activities of public non-market institutions such as schools, provided they are both controlled and financed by government. “Government” in the SNA refers to activities of the central government and all lower levels of government, such as municipalities.

11. An institution that is not controlled by the government, regardless of the extent of public financial

support, is deemed to be private. This is true for public universities that enjoy considerable autonomy and for schools and hospitals that are wholly or partially financed by government but run by religious orders or other non-profit institutions.

12. Other definitions of public sector production are possible. We limit discussion to the SNA because it is a system that was prepared under the auspices of an Inter-Secretariat Working Group drawn from five organizations: the European Commission (Eurostat), the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the United Nations (Statistics Division and regional commissions) and the World Bank.¹ Moreover, it is a system accepted, even if not fully implemented, by the vast majority of countries today.

13. When goods and services are distributed free of charge, or are sold for low, non-market prices, national income accountants typically value the output at cost rather than at market price. The value of the output of public schools, for example, is assumed to equal the sum of salaries paid, plus textbooks and other purchased materials, plus depreciation and maintenance of buildings, grounds, furniture and equipment. Occasionally, goods and services similar to those distributed for free are offered for sale at market prices, providing useful information that can be used to impute the value of the output of public or private institutions operating outside the market. But this is rare. In nearly all cases, the value of non-marketed goods and services is assumed to equal their cost of production.

14. It should be straightforward to measure the size of the public sector by summing the output of the general government (which is not sold on the market) and the output of the public corporate sector (which is). To avoid double counting, this would have to be represented as value added, that is, as the value of production less the cost of intermediate inputs. Value added comprises depreciation and the cost of capital as well as the cost of labour.

15. Unfortunately, public production statistics are not generally available. What is available, for some countries and some years, are estimates of the number of persons employed by the general government or by the entire public sector. Estimates of government employment are thought to be more reliable, or at least

more comparable, than estimates of employment in public corporations, largely because of problems in the definition of what constitutes a public as opposed to a private corporation.²

16. Estimates of government employment suffer from problems of intercountry comparability as well. Some countries report the total number of employees (both full- and part-time), whereas others report only the number of full-time workers. Few countries follow the SNA recommendation of reporting full-time equivalent employees. In addition, some countries include military personnel, whereas others exclude them, and some of these statistics include military conscripts, even though the SNA stipulates that labour that is not paid an economically significant wage should be excluded from national accounts. Another serious problem is the occasional inclusion of market activities in figures for government employment. Italy, for example, included postal and telecommunications employees in total government employment until 1993. These individuals were excluded in 1994, but previous data were not corrected, so Italy reports a large drop in government employment in that year because of this reclassification of public employees. Even close adherence to SNA guidelines can create problems for analysis. Austria, for example, registered a 13.5 per cent fall in government employment in 1997 as a result, not of any contraction of government spending, but rather a reform of the health sector, with more autonomy given to public hospitals and clinics and their subsequent reclassification as private institutions.

17. **The state as consumer.** The state is said to participate in the economy as a consumer as well as a producer. The famous accounting identity of elementary macroeconomics is:

$$\text{GDP} = C + I + G + (X-M).$$

In words, gross domestic product is the sum of private consumption plus gross investment³ plus government consumption plus net exports. Private consumption is of final goods and services only. Intermediate goods, which are inputs into the production of final goods, are not counted separately since their value is already included in the price of final goods. Investment includes public as well as private expenditure on new buildings, highways, port facilities and equipment. Construction is often shown separately from expenditure on capital equipment.

18. There is no term in the accounting identity for corporate or business consumption. The SNA assumes that all private consumption of final goods and services is by household. Corporations consume only intermediate goods, inputs into the production process. Workers, managers and stockholders consume final goods and services, but corporations do not.

19. Why, then, is there a term for government consumption? Is it not true that all government output intended for final consumption is distributed to the public either free of charge or for a nominal fee? A case can be made that government consumption of final goods and services, like corporate consumption, is everywhere equal to zero. Much of the output of government, such as schooling, health services and defence, could easily be classified as final consumption of households. Government output that is not capital formation and does not benefit consumers directly could be classified as an intermediate input into final production. Public highways, for example, are used to transport goods as well as people, and delivery is part of the cost of production. The justice system benefits parties to a business contract, who otherwise would have to hire someone as an intermediary in the event of disputes. And agricultural extension services are intermediate inputs into food production.

20. The SNA does not take this approach. It assumes that all government output other than capital formation is for final consumption and defines actual final consumption of government to be equal to its consumption expenditure on collective services. "Although collective services benefit the community, or certain sections of the community, rather than the government, the actual consumption of these services cannot be distributed among individual households, or even among groups of households such as subsectors of the household sector".⁴ This limits government consumption to general administration and other collective consumption goods such as defence. Since there is no provision for government production of intermediate goods, the remainder of government output is allocated to capital formation (investment) and private consumption.

21. No country publishes estimates of actual final consumption of government as defined in the SNA. Published statistics refer to consumption expenditure, which is also defined in the SNA. The measured size of government is much larger under this approach. Government consumption expenditure is the output of

general government less sales less capital formation plus goods and services purchased from the private sector and transferred in kind to households or the community. Transfers "in kind" include goods and services purchased by households or non-profit institutions and reimbursed by government.

22. The philosophy behind the expenditure approach is that consumption is private only when households are free to save or to switch the value of the expenditure to some other item of consumption.⁵ When government provides free goods or services, such as health care or schooling or weather reports, this is classified as government consumption. An individual is free to consume or not consume free health care, but she is not free to reduce consumption of free health care in order to increase her savings or her consumption of food. It makes no difference whether the institution that produces the good or service is private or public. All that matters is that government finance the specific consumption. If the consumer pays something out of pocket, such as tuition fees for education or charges for visits to a clinic or hospital, then part of the expenditure is allocated to government and part to private consumption. If the consumer pays nothing, the entire expenditure is allocated to government consumption, even if the school, hospital or clinic is in the private sector.

23. In summary, government consumption expenditure is equal to the sum of government production (less any fees collected) plus government purchases of (or reimbursements for) goods and services that are distributed without charge to individuals and to the community at large. Government consumption expenditure is often abbreviated as "government consumption", and is typically much larger than government production.

24. Data on government consumption expenditure are readily available from the national accounts of a large number of countries and for this reason are popular measures of the size of government. Intercountry comparability of the data is unfortunately marred by two problems. First, some countries are known to understate government consumption by classifying government transfers in kind as cash transfers to households. An example is the United States of America, which, in its national accounts, classifies reimbursements through Medicare and Medicaid as cash transfers to households rather than as government consumption of health services. Similar practices exist in compilation of

national accounts for expenditures on health care in Australia, Austria and Spain.⁶ At the same time, other countries with extensive systems of private medical care, such as Canada, following SNA guidelines, classify public expenditures on health care as government consumption. Similar discrepancies exist in treatment of other social transfers in kind, such as education. The resulting statistics for government consumption are thus not fully comparable between countries.

25. A second and more serious problem arises from classification of government expenditures as production subsidies rather than social transfers in kind. This is more serious because it is allowed by the SNA. Governments are free to classify expenditures in support of independent universities and hospitals, for example, as either (a) transfers to households, which is part of government consumption, or (b) production subsidies, which are treated as negative taxes. Subsidies to producers reduce the value of measured output and consumption whereas transfers to households do not. This seriously affects the comparability of estimates of government consumption across countries and over time.⁷

26. The state as provider of cash transfers and subsidies. We have seen that consumption expenditures of government consist of goods and services supplied to individual households and to the community as a whole. Governments also provide cash payments to households and producers. When the recipient is a household the payment is defined in the SNA as a current transfer payment. When the recipient is a private or public institution it is defined as a subsidy or, when tied to acquisition of fixed assets, as a capital transfer.

27. Transfer payments include payment of interest on the national debt, provision of public pensions for the elderly, income support for the unemployed, and other cash outlays. These expenditures do not add to government consumption expenditure, but they transfer purchasing power from the taxpayer and the purchaser of government bonds to designated individuals and institutions. This redistribution of income is an essential feature of the modern welfare state.

28. For the purpose of measuring the size of government, it makes little sense to look at subsidies and cash transfers separately from social transfers in kind or, for that matter, from government provision of

collective consumption goods. A useful measure of the presence of government in an economy would thus be government consumption expenditure plus subsidies and cash transfers. Unfortunately, this statistic is not available at the present time, though national accounts are moving in this direction with satellite tables known as "income and outlay" accounts.

29. One important subsidy that is never recorded in national accounts is the implicit subsidy to producers provided by tariffs on imports. Protection allows domestic producers to raise their prices, in effect forcing consumers to subsidize their products. Governments could achieve the same result by taxing the consumption of specific goods, then returning the tax as a subsidy to domestic producers but not to importers. This policy, except for administrative expenses, would replicate tariffs, but it would be recorded as explicit taxes and subsidies. With tariffs, governments record only taxes collected on actual imports, not the implicit taxes paid by consumers who purchase protected domestic output. With very high tariffs, or import prohibitions, protection is high yet few or no taxes are collected.

30. What is widely available are data on actual taxes collected and expenditures made by central governments. With few exceptions these do not provide information on government consumption, for there is almost never an estimate of depreciation of buildings and equipment. Instead, the data include capital expenditures, which are often not collected separately from other expenditures. The entire expense of a new building, for example, is allocated to the year of its construction even though it provides services for many subsequent years. This is an important limitation of the data. More serious, however, is the fact that, with few exceptions, information on taxes and expenditures of lower levels of government is not available for developing countries. Sometimes researchers report total government tax revenue and expenditures for developed countries, then central government tax revenue and expenditures for developing countries, eliminating from their sample two obvious federal states (Brazil and India). We feel that this is not appropriate, since many unitary states also have large local government expenditures, so we report central government taxes and expenditures for all countries, developed as well as developing.⁸

31. Measuring the size of the public sector. We have seen that there are many ways to measure the size

of the public sector, and policies chosen by governments to achieve specific goals have a profound effect on these measures. This can perhaps best be illustrated with a simple example.

32. Suppose that the state wants to improve air quality through generalized use of catalytic converters on motor vehicles. There are a number of ways to accomplish this goal. The state may simply use its power to regulate, that is, decree that each motor vehicle sold in the country be equipped with a catalytic converter. A cost is imposed on the consumer, which shows up in the national accounts as private consumption expenditure. There is no change in the size of the public sector, at least in so far as we are able to measure it.

33. Alternatively, the state may choose to produce catalytic converters in publicly owned plants, then sell them to consumers, who are required to install them on their vehicles. This policy increases the size of the public corporate sector, but it has no effect on government production or consumption.

34. Rather than sell the catalytic converters it produces, the state might choose to give them away (or charge an economically insignificant price) to all owners of motor vehicles. With this policy, the cost of production of catalytic converters is registered in national accounts as government production and the consumption of catalytic converters is registered as government consumption expenditure. By either measure, size of government increases. If instead of giving the product away, the state subsidizes purchasers by granting them an income tax credit, there would be no measurable effect on government production (since the catalytic converters are sold in the first instance) or consumption (for the same reason).

35. Now suppose that the state chooses not to produce catalytic converters, but rather to purchase them from the private sector and distribute them free of charge to owners of vehicles. The result (compared to the situation prior to mandated catalytic converters) is an increase in government consumption expenditure, with no change in government production.

36. Finally, suppose that the state decides, rather than provide each owner of a motor vehicle with a transfer in kind, to subsidize the private production of catalytic converters so that their price is close to zero. Subsidies are not part of government consumption, so

government expenditure is the only measure that will capture this increase in size of government.

37. In any of these scenarios, the costs to society are the same: the resources needed to produce the required number of catalytic converters. And the benefits to society are also the same: improved air quality. But effects on measured size of the public sector vary greatly, as do effects on household budgets. With pure regulation, costs of cleaner air are borne proportionately by those contributing to pollution. With free government provision of catalytic converters, costs are borne by taxpayers in general, irrespective of their contribution to air pollution.

38. In this particular example, countries everywhere rely solely on regulation to mandate the use of catalytic converters. But policy makers by no means pursue all goals in this manner. In the above discussion, substitute “primary education” for “catalytic converters” and “households with children” for “owners of motor vehicles”. All of the options are again equally plausible, yet countries around the world do not stop with regulation (requiring each child to attend school); they almost invariably offer residents free public schooling or, at the very least, provide generous subsidies and tax credits for independent schools.

39. Rather than focus on a single measure of the size of the public sector, the present report presents available data for a variety of measures: government and public sector employment, government consumption expenditures, central government expenditure and central government tax revenue. The report ends with a discussion of possible determinants of the size of the public sector and a brief conclusion. The emphasis throughout is on differences between countries and regions of the world at the beginning of the decade and the latest available year, which is usually 1997.

2. Measures of the size of government

40. **Government and public sector employment, 1990 and 1997.** Table 1, contained in the annex to the present report, gives data on government and public sector employment for the years 1990 and 1997 or as close to those two years for which data are available. The main source of information is a survey on public sector employment statistics which was carried out by the International Labour Organization (ILO) in October

of 1998.⁹ This was supplemented with data from OECD for eight countries. In all cases the data are comprehensive in that they include employment at all levels of government.

41. To facilitate comparisons, the number of persons employed is shown for each country as a percentage of the total population. ILO reports government employment as a percentage of total employment. This is not done here because “total employment” misses a large percentage of workers in some countries.¹⁰ Calculations were also made for the total population aged 15 through 59; these are not reported because this alternative measure did not affect comparisons of regions, nor the statistical results for determinants of the size of the public sector.

42. Detailed results can be seen in table 1, while figures 2a through 3c (see annex) provide a quick overview. Two types of diagrams are used in the figures of this and subsequent sections. The first type of diagram contains bars, one for each region of the world. The bottom of the bar is the minimum value registered by countries in the region, and the top the maximum. In other words, the bar represents the range of observations observed. The solid horizontal line represents the median or midpoint of the distribution. One half of all observations lie below and one half above the median. Unless a distribution is very symmetrical, the median is not equal to the simple average (mean) reported in table 1.

43. The second type of diagram provides a quick overview of trends. It consists of a square with a diagonal line running from the lower left hand to the upper right hand corner. For each country, a single point is entered into the box. The vertical axis measures the statistic for 1997 and the horizontal axis the same statistic for the year 1990. If an observation lies below the diagonal line, this means that employment is falling as a proportion of population. If it lies above the line, this indicates that employment is rising.

44. Figures 2a and 2b (see annex) contain the bar diagrams for government employment in five regions of the world; three features are striking. First, government, as measured by the share of government employees in total population, is surprisingly large in the developed and transitional economies compared to developing countries. Second, by this measure, governments are smallest in Africa, followed by Asia

and Latin America, in that order. Third, there is an impressive diversity of government size in all regions, especially for the transitional and developed countries, and this seems more important than any measure of central tendency such as the mean or the median.

45. We have estimates of government employment for 51 countries in 1990 and 54 in 1997 (or close years), but for only 47 countries are there estimates for both years. Figure 2c illustrates the trend in government employment for these 47 countries. Most of the observations are close to the diagonal, an indication that there was little change in government size. But two economies in transition (Azerbaijan and Kazakhstan) register impressive reductions in the ratio of government employment to total population.

46. Figures 3a and 3b (see annex) show the same statistics for employment in the public sector (general government plus public corporations). The public sector, as is the case with government narrowly defined, tends to be larger in developed and transitional economies compared to developing countries. Observations for Latin America and the Caribbean are surprisingly compressed (the bar has a short height). The vast majority of the 38 countries for which we have data for both years show little change in the ratio of public employment to population: nearly all observations lie on or close to the diagonal line of figure 3c. Seven “outliers” show a large drop in public sector employment; all of these are transition economies that experienced massive privatization of state enterprises.

47. **Government consumption, 1990 and 1997.** Consumption is an alternative way to measure size of government and government consumption is typically expressed as a share of GDP. It should be noted that this is a measure of the size of government, not of the entire public sector. In national accounts, government consumption is the sum of all goods and services provided without charge to individual households and collectively to the community. It includes goods and services purchased from the private sector as well as those produced by government, so is not directly related to government employment. It is perfectly possible for a country with low government employment to have high government consumption if government purchases large amounts of schooling, health care and other services from private institutions.

48. One problem affecting the comparability of these statistics between countries, as we have seen, is the fact that national accounts sometimes disguise transfers in kind as cash transfers or subsidies that are excluded from government consumption expenditure. Another serious problem is that, at prevailing exchange rates, the cost of government consumption varies widely among countries. Services, such as schooling, nursing or general administration, are seldom traded internationally, so their cost is much lower in countries with low wages. Goods tend to be exported and imported, so the cost and prices of goods tend to be similar regardless of the level of wages. In other words, the relative price of services is low in low-wage countries. Services weigh heavily in government consumption, so division of government consumption expenditure (in local prices) by GDP (also in local prices) biases downwards our estimates of the share of government consumption in the GDP of low-income countries. Similar biases apply to comparisons over long periods of time because productivity in services lags behind productivity in goods, causing the relative price of services to increase.¹¹

49. The International Comparison Programme (ICP) of the United Nations attempts to solve this problem by estimating the GDP of each economy not in domestic prices, but in prices of a numéraire country, the United States. These prices are known as purchasing power parity (PPP) prices because with them one United States dollar has the same purchasing power everywhere in the world for a uniform basket of goods and services. It is not enough to know prices in the United States; prices in each economy must also be known in order to transform the GDP components from domestic to PPP prices. The most recent PPP estimates are for the year 1985 and cover 64 countries;¹² the ICP is currently preparing estimates for 1993 covering a larger set of countries.

50. A group of researchers noted certain regularities between shares of major expenditure components of GDP measured in domestic prices and shares of the same components measured in PPP prices. They used statistical techniques to extrapolate the PPP estimates to years and to countries not included in the ICP. The results are known as the Penn World Tables. The latest version contains statistics for 152 countries, in most cases for years from 1950 through 1991 or 1992.¹³

51. Appendix table 1 reports government consumption as a share of GDP in 1990 (PPP prices

and domestic prices) and 1997 (only domestic prices). The 1990 government consumption shares in domestic prices were transformed to government consumption shares in PPP prices, using estimates of price levels of GDP and price levels of government consumption reported in the Penn World Table (Mark 5.6).¹⁴

52. Table 2 summarizes these data with simple averages for the complete sample and for the five main regions of interest. The second and third columns of the table refer to the same statistic: 1990 government consumption in domestic prices; they differ because the sample of countries in the second column is constrained to equal the countries for which PPP price data are available. In other words, the first and second columns differ only because prices differ (PPP versus domestic), not because the samples differ.

53. In comparing the PPP ratios to those for domestic prices, three results deserve mention. First, government consumption as a share of GDP is much smaller measured in PPP prices than in domestic prices for developed countries, but it is much larger in PPP prices for the developing countries. This pattern is to be expected, since PPP prices are much higher than domestic prices for services in low-income countries. For the very small sample (four countries) of economies in transition, there is little difference on average between government consumption as a share of GDP in PPP prices and the same statistic in domestic prices.

54. Second, government size, as measured by consumption with domestic prices, is larger in the developed than in the developing countries; this is reversed with PPP prices, which show developing countries to have far larger governments. While there is no doubt that domestic prices understate the importance of government consumption in low-income countries, it may well be that PPP prices create a bias in the opposite direction. Services provided by government are not sold on domestic markets, much less international markets, so output is assumed to equal the sum of inputs and it is very difficult to correct for differences in quality. Schoolteachers and tax collectors in Ghana are paid much less than schoolteachers and tax collectors in the United States. Is the quality of their work and their productivity identical? PPP estimates assume that they are, provided they have identical years of training, so adjust only for differences in the amount of education that such workers bring to their jobs.

55. Third, by this measure there was a reduction in average size of government over the decade in Africa and Asia. In contrast, there was little change in the average ratio of government consumption to GDP in the developed countries or in Latin America and the Caribbean. Surprisingly, the economies in transition registered an increase in government consumption, from an average of 16 per cent of GDP in 1990 to 17 per cent in 1997.

56. These same data are summarized in a different way in figures 4a, 4b and 4c (see annex). What is striking about these graphs is the fact that in every case a very large range (long bar) overshadows the measures of central tendency. In other words, there appears to be more variation within regions than between regions, with the possible exception of the PPP estimates for developed countries shown in figure 4a.

57. Central government expenditure, 1990 and 1997. A third measure of government size is central government expenditure, which includes cash transfers and subsidies as well as outlays for consumption and investment. These statistics, which are almost as widely used as government consumption, have two unfortunate drawbacks. First, they record investment expenditure rather than depreciation of capital, so that all the outlay for a large highway or a new port, for example, shows up in the year of construction and not in subsequent years when it is actually in use. Secondly, the statistics include only transfers to lower levels of government, ignoring the self-financed expenditures of provincial and municipal governments.

58. Appendix table 3 reports the available data on central government expenditures for 1990 and 1997 (or close years) as published in the IMF annual *Government Finance Statistics*. The figures are expressed as a share of GDP. It should be noted, however, that expenditure, unlike consumption, is not a component of GDP, so it is possible for government expenditure to exceed GDP.

59. The simple averages of these statistics are reported for groups of countries in table 3. The sample size is not the same in the two years, so not too much importance should be given to comparisons of 1990 with 1997. Note, however, that central government expenditures of the developed countries, which average 37 per cent of GDP, are much larger than those of the developing countries. Latin America and the Caribbean

is a region with low central government expenditure, amounting on average to less than 23 per cent of GDP in 1997.

60. These same data are displayed in graphic form in figures 5a and 5b (see annex) and show that the range of observed ratios is extremely large (the bars are very long) in both years. In each of the five regions there are countries with very low and countries with very high government expenditures. This indicates that there is a great deal of diversity within regions in styles of government.

61. Table 4 summarizes for the entire sample and for regions the distribution of central government expenditures by type of expenditure and by function. The basic data are not included in the present report, but are available from the IMF publication *Government Finance Statistics*. Looking first at type of expenditure, for the developed and transitional economies “subsidies and cash transfers” is by far the most important category of expenditure. This is not true for developing countries, where wage payments exceed subsidies and cash transfers, unless one includes interest payments, which are a form of cash transfer.

62. Expenditures by function are grouped under four main headings: traditional state functions, modern state functions, interest payments and other expenditures. Traditional expenditures are those for general administration, justice, police and defence. For the most part these are expenditures on collective consumption goods. Modern state functions refer to transfers in kind, largely education and health care, plus cash transfers and subsidies. Modern expenditures are thus directed to individual households and productive enterprises; they form the basis of the modern welfare state. Interest payments need no explanation, but it should be noted that these represent payments of nominal interest. For countries with high inflation, a large part of these payments might more properly be classified as debt repayment rather than debt servicing.¹⁵ “Other expenditures” for the most part are cash transfers to lower levels of government, which are ultimately spent on traditional state functions, on modern state functions or on payment of interest.

63. Modern state functions account for more than two thirds of the budget of central governments in developed countries and in economies in transition, a reflection of a long tradition of social expenditures in those countries. But modern functions are surprisingly

important in the budgets of developing countries as well, and account for more than half of central government expenditures in Africa and Asia, and nearly two thirds of expenditures in Latin America. Developing countries allocate a large share of their budget to education compared to central government expenditures in developed countries, but this may reflect, in part, the fact that responsibility for education is more often transferred to lower levels of government in the developed world.

64. Figures 5a and 5b (see annex) illustrate the range for the ratio of central government expenditures to GDP in five major groupings of countries. As was the case with employment and consumption, there is considerable overlap between the five groups. In sum, there exists considerable diversity within the developed, transitional and each of the three groups of developing countries.

65. **Central government tax revenue, 1990 and 1997.** Table 5 reports information for groups of countries on central government tax revenue. It is interesting to note that information is available for more countries on taxation than on expenditure: more than 100 countries as compared to only about 80 for expenditure. Tax revenue tends to be lower than expenditure because governments have sources of revenue other than taxes: they charge fees for licences and for use of public property, they collect royalties on the extraction of oil and minerals and they borrow money. Nonetheless, the pattern of tax revenue as a share of GDP is similar to that of expenditure: highest in the developed and transitional economies, lowest in the developing countries.

66. Table 5 also reports ratios for four broad types of taxes: taxes on international trade, taxes on retail sales (including value-added taxes), taxes on wages and direct taxes on income and wealth. Over the decade, there was increased taxation of sales and modest decreases in revenue from trade taxes almost everywhere, but little change in other types of taxes. Trade taxes remain quite important in the developing countries, particularly in Africa, whereas developed countries rely more on other taxes.

3. Determinants of the size of government

67. Regardless how one measures it, size of government varies widely from country to country. The

tables of a technical appendix report our effort to relate measures of size of government to variables such as income per capita, degree of globalization and size of country (population and land area). Other variables, known as “dummies” because they take values of zero and one, control for independent effects common to a particular group of countries (developed, transitional, African, Asian or Latin American). The statistical technique applied, which is known as ordinary least squares regression, involves fitting an equation that minimizes the sum of the squared distances between each data point and the regression equation. Readers familiar with this type of analysis may want to examine the detailed results in the appendix tables. What follows is a non-technical overview of those tables.

68. To summarize briefly the statistical findings, there is a dichotomy. There are two distinct types of regression equations that have only the control variable “income per capita” in common. When government size is measured by employment or by consumption expenditure, the variables that explain government size are population and land area. However, when government size is measured by central government expenditure, globalization is a significant explanatory variable, but not population or land area.

69. **Economies of scale in government.** In each of the regression equations for the ratio of government employment to population (see technical appendix, table A3) and for the ratio of government consumption to GDP (technical appendix, table A4), the population variable has a highly significant and negative coefficient while the land area variable has an equally significant but positive coefficient. Globalization, measured as openness to trade, is never significant. This is true for the year 1990 as well as 1997, and for consumption measured in PPP prices as well as in domestic prices and thus constitutes strong evidence of economies of scale in the provision of government services. If there are economies of scale in the provision of government services, costs (and presumably expenditures) are lower in countries with large populations (holding territorial size constant) or small territories (holding population constant). In other words, high population density facilitates provision of defence, highways, schools, medical care and other government services.

70. The regression results using the government employment/population equation for 1997 are illustrated in figure 6a (see annex) for a small country

the size of Belgium and in figure 6b for a large country the size of the United States. Income per capita is also a variable in the equation and is assumed to equal the actual income of each respective country in the year 1997. Government employment is not known for Belgium, but the equation depicted in figure 6a predicts that this would amount to approximately 5.9 per cent of Belgium's population of 10.1 million persons. Reading down the curve, a country with Belgium's income per capita and land area but twice its population would require less than twice the number of government employees, 4.8 per cent of the 20.2 million residents, to be precise.

71. The government provided jobs for approximately 7.3 per cent of the 270 million residents of the United States in 1997. The equation depicted in figure 6b (see annex) predicts government employment/population ratio of only 5.7 per cent, and, by this measure, government in the United States is larger than expected. Canada, with more land and a population of only 30 million, is expected, from our regression equation, to suffer diseconomies of scale and employ 10.3 per cent of its population at all levels of government. Actual government employment amounts to only 8.4 per cent of population. Thus, from the raw statistics, Canada appears, relative to its population, to have larger government than the United States. Taking into account the diseconomies of serving a small population dispersed over a wide area, Canada actually has a rather small government compared to that of the United States! Similar considerations help to explain the large size of government in countries of northern Europe, especially Finland, Norway and Sweden, compared to more densely populated countries in southern Europe. But our statistics are crude and may require some adjustment for quality of land. It is easier to police frozen tundra or desert wasteland than to administer areas that are actually inhabited by people spread over large distances.

72. **Income per capita.** One of the best-known stylized facts of public economics is "Wagner's Law", formulated more than a hundred years ago by Adolph Wagner, a leading German economist of his day. It asserts that there is a long-run tendency for government activity to grow faster than the economy.¹⁶ In a cross-section of countries, the law predicts a positive relationship between income per capita and all measures of government size.

73. The income variable is, indeed, statistically significant in most of the regression equations. But there is one problem. Its coefficient, though highly significant in each instance, is negative in the equation for government consumption in PPP prices, but positive in the equation for government consumption measured in domestic prices. The coefficient is also positive in the regression equations for government employment and central government expenditure, so it is difficult to interpret the PPP result as a refutation of Wagner's Law. It more likely reflects a failure to adjust adequately for differences in the quality and productivity of employees in the service sector of low-income countries compared to their counterparts in developed countries. In other words, this finding constitutes evidence that the PPP estimates of government consumption in low-income countries are biased upwards.

74. **Globalization and size of government.** The second type of regression equation is that for central government expenditures (see technical appendix, table A5) and tax revenue (table A6), each expressed as a share of GDP. Globalization is a significant explanatory variable in all these regressions, but population and land area are not. The fit of the equation is somewhat better for expenditure on modern state functions than for total expenditure. These results are consistent with recent work of Alberto Alesina and Romain Wacziarg, who report similar findings in a cross-country comparison of government consumption and expenditure.¹⁷ And it is true regardless of whether we measure "globalization" as the ratio of trade to GDP or as the presence of foreign direct investment. It was not possible to distinguish between effects of trade and effects of foreign direct investment because of strong collinearity: transnationals are known to be effective conduits for both exports and imports.¹⁸

75. The positive relationship between openness and central government expenditure and taxation is evident, though not as strongly, even without controlling for the effect of income per capita and regional dummies. This is shown in figures 7, 8 and 9 for total expenditure, expenditure on modern state functions and tax revenue, respectively (data in all cases are for the year 1997). The fit is not quite as good for taxation as for expenditure because some governments are able to combine high expenditure with low taxation thanks to revenue from royalties on the extraction of oil and other minerals.

76. Income per capita is not a significant determinant of tax revenue in the regressions reported in table A6. In regressions of components of tax revenue, it is positive and significant only for payroll taxes, not for trade taxes, sales taxes or direct taxes on income and wealth (see tables A7 and A8). Since income per capita is measured in PPP prices, this might reflect to some extent the poor quality of the underlying statistics. It also reflects the fact that some high-income countries enjoy considerable revenue from royalties on oil and other minerals and so have little need to impose taxes on their population.

77. From a policy perspective, it is remarkable that openness, though positive and significant in the regression of total tax revenue, is not significant in the regressions of any of the components of tax revenue. The coefficient of openness in fact takes a positive, though insignificant, sign in 10 of the 12 regressions for components of central government taxes. One might have expected reduced revenue from trade taxes to be offset with revenue from sales taxes or direct taxes. There is no evidence of this, and it appears that governments with relatively open economies are better at collecting all types of tax, even taxes on trade.

78. In any case, revenue needs are no reason to impose discriminatory taxes on international trade. If government wants to tax the consumption of a luxury good, such as television sets or passenger automobiles, it can impose a selective consumption tax and collect it at the customs house, in the case of imports, and at the factory, in the case of domestic production. Discriminatory taxation of imported goods encourages expansion of untaxed domestic production behind tariff walls, with a consequent loss of tax revenue.

79. **Changes in size of government.** The cross-section evidence on the relationship between openness and the size of central governments, as measured by expenditure and taxation, is evidence that in the long-run there is no conflict between openness and government expenditure. Open economies are not laissez-faire economies. Indeed, on average, governments of open economies spend a significantly larger portion of GDP and collect the additional taxes needed for this task.

80. But what about the short run? Is an increase in openness associated with an increase or a decrease in size of government? One might expect a negative relation, even if the long-run relation is positive, if

policy makers who open their economies to the outside world also reduce government spending and taxation. Even if it is not required, a negative correlation may result if policy makers believe that small government is a condition for open markets.

81. There is no evidence for the systematic presence of a negative relation of this type in the 1990s. Of the 116 countries for which we have export and import data, 81 registered an increase in the ratio of trade to GDP. Of these 81 countries, information is available on changes in central government expenditure for 54 countries, and information on changes in tax revenue for 60 countries. Only in a minority of countries did expenditure and taxation decrease along with trade. More precisely, 23 of the 54 countries registered a decrease in government expenditure, 25 of the 60 countries registered a fall in total tax revenue and 24 registered a decrease in revenue from direct taxes. The majority of the “globalizers”, therefore, actually registered increases in expenditure and tax revenue.

82. The regression results reported in table A9 also provide no evidence that globalizers have successfully shrunk central government budgets in the last decade. In fact, the regressions provide strong evidence that an increase in openness is associated with an increase in central government expenditure and revenue. After controlling for changes in income per capita, which has a positive, independent effect on the size of government budgets, increased openness has a positive and significant effect on government expenditure, total tax revenue and revenue from direct taxes. These variables should be monitored, for there is no guarantee that such a relationship will continue in the future. In the last decade, however, globalization and budgets of central governments increased hand in hand. The faster the pace of globalization, the larger was the increase in central government expenditure and taxation. There is no evidence so far that globalization is causing the demise of the nation state. On the contrary, globalization is placing increasing demands on budgets of central governments and governments are responding to these demands.

4. Conclusion

83. By way of conclusion, we return to the four questions posed at the beginning of this paper. How can the size of the public sector be measured in theory? To measure the total impact of the State on society is

an impossible task, in part because it is impossible to quantify the impact of government regulations in any meaningful way. Nonetheless, it is possible to measure some aspects of the size of the public sector. There are three broad approaches: production, consumption and expenditure. The production and consumption approaches rely on information from basic national accounts, whereas the expenditure approach requires knowledge of government taxation and outlays.

84. Using the production approach, one would like to divide GDP into two parts: output of the private sector and output of the public sector. In addition, remunerated labour could be divided into private and public employment. In the System of National Accounts (SNA), the public sector is the sum of general government (all levels) plus public corporations. Public corporations, like private firms, sell goods and services at market prices, whereas government, by definition, does not, so for some purposes it is better to measure only government output (or employment) rather than output (employment) of the entire public sector.

85. The consumption approach is more complex. It is difficult, even conceptually, to distinguish between public and private consumption. According to the SNA, public corporations produce but do not consume final goods and services, so it follows that public consumption must equal government consumption. In this spirit, one might conclude that households consume all final goods and services, in which case it makes no more sense to speak of government consumption than to speak of business consumption. A less extreme view is to classify as government consumption those services that benefit the community but cannot be allocated to individual households. In the jargon of the SNA, collective consumption of these services (such as defence) make up the actual final consumption of government; all other consumption is defined as actual final consumption of households. A broader measure defines government consumption as the sum of collective consumption goods plus transfers in kind (such as schooling) to households. In the SNA, this broad measure is known as government consumption expenditure. Total consumption in the national accounts is not affected by one's definition of government consumption, only its division into public and private consumption.

86. Expenditure is the most comprehensive of the three approaches. It focuses on government, but

includes public and private corporations to the extent that government subsidizes goods and services sold in the market. As a first approximation, government expenditure ought to record outlays of all levels of government, cash transfers as well as expenditure on transfers in kind and on collective consumption goods. Ideally, the measure should include also the value of tax expenditures (credits granted to specific taxpayers) as well as the value of implicit subsidies to producers produced by trade restrictions. A drawback of the expenditure approach is that it sums capital and current expenditures. Expenditure on an asset with a long life, such as a highway, bridge or building, is recorded in the year (or years) of construction and is not spread over the useful life of the asset. This can easily be corrected by replacing spending on capital formation with an estimate of the current cost (including depreciation) of fixed assets owned by government.

87. **How can the size of the public sector be measured in fact?** Actual measurement presents myriad problems. For the production approach, output statistics are not generally available. Employment statistics are available, for a limited number of countries and limited years, for government or, less often, the entire public sector. The employment figures suffer from lack of comparability in addition to their limited availability. Statistics on government consumption expenditure, but not actual final consumption, are widely available. These also suffer from poor inter-country comparability, primarily because governments sometimes choose to record public spending on health and education as government consumption (transfers in kind), sometimes as subsidies (negative taxes), and sometimes as cash transfers to households. Expenditure data are available in most cases only for central governments, without any estimate of the value of tax expenditures, much less the value of implicit subsidies given to producers.

88. **What accounts for variation in the size of the public sector?** Despite the poor quality of available data, statistical tests on determinants of government size produce interesting and surprisingly robust results. When government is measured by employment or by consumption expenditure, there is strong evidence of economies of scale in the provision of services, but no evidence that the amount of government services is affected by the extent that a country is integrated into world markets. When government is measured by central government expenditure, it is integration into

world markets (“globalization”) that determines size, with no evidence of economies of scale. Moreover, the relationship between globalization and government expenditure is positive and it persists when one looks at changes in expenditure and changes in globalization over the past decade rather than their levels at the beginning or end of the decade. In sum, there are economies of scale in provision of government services such as defence, health and education, but a government’s budget is driven by globalization, not by the land area or population of a country.

89. What type of data can provide a reasonable picture of the public sector in a given country?

Future research would benefit greatly from improvement in both the quantity and the quality of data. Priority should be given to expenditure by all levels of government. In many countries lower levels of government are responsible for education and health, with the result that these social expenditures are missing from central government statistics. Second priority could be given to collection of data on government employment, in terms of full-time equivalent workers and excluding conscript labour so as to facilitate inter-country comparisons. Third priority should be estimation of the value of tax expenditures, including the value of implicit subsidies provided to producers through protective tariffs and quotas.

90. The Secretariat would welcome the views and recommendations of the Meeting of Experts on the following:

- (a) Would it be useful to collect and organize data on government expenditures at all levels?
- (b) Would it be useful to collect and organize data on government employment?
- (c) Would it be useful to collect and organize data on tax expenditures?
- (d) Would it be useful to publish the above data on a regular basis with appropriate analysis of changes and trends?

Notes

¹ *System of National Accounts, 1993* (United Nations publication, Sales No. E.94.XVII.4).

² OECD considers employment data for public corporations to be so poor that it reports on a regular

basis only employment for general government in member countries. See OECD, *Trends in Public Sector Pay in OECD Countries* (Paris, 1997) and *Statistical Sources on Public Sector Employment* (Paris, 1994).

³ In the national accounts, “gross investment” is referred to as gross capital formation.

⁴ *System of National Accounts, 1993* (United Nations publication, Sales No. E.94.XVII.4), para. 9.91.

⁵ “Whereas the recipients of current cash transfers may dispose of them as they wish, the recipients of social transfers in kind have little or no choice.”, *System of National Accounts, 1993* (United Nations publication, Sales No. E.94.XVII.4), para. 8.100. Note however that the authors of the SNA do not allow for the fact that social transfers are fungible. Recipients of free schooling, for example, would spend at least part of their income on schooling were it not provided by government, so government expenditures on schooling ultimately finance household savings and consumption of other goods and services.

⁶ See OECD, “Expenditure on health in national accounts”, available on the Internet at www.oecd.org/.

⁷ SNA treatment of indirect taxes differs markedly from that of subsidies. Sales taxes always increase the price of a good or service and are never recorded as a negative “transfer in kind” to households.

⁸ This is also the approach of the World Bank in *The State in a Changing World* (World Development Report, Oxford University Press, New York, 1997), chapter 1.

⁹ See Messaoud Hammouya, “Statistics on Public Sector Employment: Methodology, Structures and Trends”, Working Paper of the Bureau of Statistics of the International Labour Office, Geneva, July 1999. ILO circulated an earlier version of this paper in December 1998 with the title “Statistiques de l’emploi dans le secteur public: méthodologie, structure et tendance”.

¹⁰ Agricultural workers, for example, are excluded from “total employment” in India and four other countries. And statistics for Egypt exclude workers in private establishments with fewer than 10 employees. It is somewhat misleading, then, to report that the public sector accounts for 70 per cent of “total employment” in Egypt and India, the highest figure of all countries surveyed. See Messaoud Hammouya, op. cit., notes to table 1.

¹¹ This has come to be known as “Baumol’s Disease” after the economist who first drew attention to it. See William J. Baumol, “Containing medical costs: Why price controls won’t work”, *Public Interest*, No. 93 (Fall 1988).

¹² See *World Comparisons of Real Gross Domestic Product and Purchasing Power, 1985: Phase V of the*

International Comparison Programme, Series F, No. 64 (United Nations publication, Sales No. E.94.XVII.7 and Corr.1).

¹³ See Robert Summers and Alan Heston, "The Penn World Table (Mark 5): An expanded set of international comparisons, 1950-1988", *Quarterly Journal of Economics*, vol. 106, No. 2 (May 1991). The current version (Mark 5.6) was released in January 1995 and can be downloaded from the Center for International Comparisons at the University of Pennsylvania (<http://pwt.econ.upenn.edu>) or accessed online from the University of Toronto (<http://datacentre.chass.utoronto.ca/pwt/index.html>).

¹⁴ Government consumption shares of GDP in PPP prices reported in the Penn World Table necessarily ignore subsequent revisions to national accounts. For this reason, the figures of appendix table 1 were calculated by applying PPP price indexes to the latest SNA estimates of shares. For countries that have not revised their national accounts, the resulting PPP share of government consumption in GDP is identical to that reported in the Penn World Table. A careful reader will note that in the numéraire country (the United States) 1990 government consumption is 12.8 per cent of GDP in PPP prices and 17.7 per cent in domestic prices. The two figures are surprisingly different. They differ because price levels in the Penn World Tables are expressed relative to the world rather than relative to the United States. Thus, price indexes for components of GDP for the United States are not equal to one, even though the price index for the overall GDP is. More precisely, the price index for government consumption in the United States is equal to 1.38, the price index for GDP is equal to one, and 12.8 is equal to 17.7 divided by 1.38.

¹⁵ Suppose a government has to service a debt of 1 million pesos, prices are stable and the annual interest rate is 10 per cent. With interest payments of 100,000 pesos the value of the outstanding debt would remain unchanged. Supposing that there is price inflation of 10 per cent a year, and that the interest rate is 20 per cent per year, interest payments would double, to 200,000 pesos. But the burden of the debt is unchanged, for if the government were to issue new nominal debt in the amount of 100,000 pesos, the real (constant peso) value of the debt would remain unchanged.

¹⁶ See Adolph Wagner, "Three extracts on public finance", originally published in German in 1883 and included in English translation in R. A. Musgrave and A. T. Peacock (eds.), *Classics in the Theory of Public Finance* (London, Macmillan, 1958).

¹⁷ Alberto Alesina and Romain Wacziarg, "Openness, country size and the government", *Journal of Public Economics*, vol. 69, No. 3 (September 1998). See also David R. Cameron, "The expansion of the public

economy: A comparative analysis", *American Political Science Review*, vol. 72, No. 4 (December 1978); Peter Saunders, "Explaining international differences in public expenditure: An empirical study", *Public Finance*, vol. 43, No. 2 (1988); and Dani Rodrik, "Why do more open economies have bigger governments?" *Journal of Political Economy*, vol. 106, No. 5 (1998).

¹⁸ Larry Willmore, "Transnationals and foreign trade: Evidence from Brazil", *Journal of Development Studies*, vol. 28, No. 2 (January 1992). See also United Nations, *World Investment Report 1999* (New York and Geneva, Sales No. E.99.II.D.3). Not all regressions using the foreign direct investment variable are reported in the tables in the appendices.

The tables, figures and appendices listed below appear as annexes to this report and will be issued in English only.

Tables

1. Government and public employment as a percentage of population.
2. Government consumption as a percentage of GDP.
3. Central government expenditure as a percentage of GDP.
4. Central government expenditures by type and by function, as a percentage of all central government expenditure, 1997.
5. Central government tax revenue as a percentage of GDP.

Figures

1. The public sector in the 1993 System of National Accounts.
- 2a. 1990 ratio of government employment to population.
- 2b. 1997 ratio of government employment to population.
- 2c. Government employment as a percentage of population, 1990 and 1970.
- 3a. 1990 ratio of public sector employment to population.
- 3b. 1997 ratio of public sector employment to population.
- 3c. Public employment as a percentage of population, 1990 and 1997.
- 4a. 1990 ratio of government consumption to GDP (PPP prices).
- 4b. 1990 ratio of government consumption to GDP (domestic prices).
- 4c. 1997 ratio of government consumption to GDP (domestic prices).
- 5a. 1990 ratio of central government expenditure to GDP.
- 5b. 1997 ratio of central government expenditure to GDP.
- 6a. Small territory: economies of scale in government.
- 6b. Large territory: economies of scale in government.
7. Openness and central government expenditure (total).
8. Openness and central government expenditure (modern state functions).
9. Openness and central government tax revenue.

Technical Appendix to Section 1.3 (tables)

- A1. Dependent variables used in regressions.
- A2. Independent variables used in regressions.
- A3. Regression of government employment/population ratios on country size and other variables.
- A4. Regression of government consumption/GDP ratios on country size and other variables.

- A5. Regression of central government expenditure/GDP ratios on openness and other variables.
- A6. Regression of central government tax revenue/GDP ratios on openness and other variables.
- A7. Regression of components of central government taxes/GDP ratios on openness and other variables, 1990.
- A8. Regression of components of central government taxes/GDP ratios on openness and other variables, 1997.
- A9. Regression of changes in central government expenditure/GDP and taxes/GDP ratios on changes in openness, income and other variables, 1990-1997.

Statistical Appendix (tables)

- 1. Government consumption as a percentage of GDP, 1990 and 1997.
- 2. Central government expenditure as a percentage of GDP, 1990 and 1997.
- 3. Central government tax revenue as a percentage of GDP, 1990 and 1997.