

**Collective services**

**9**



## 9.1 Introduction

9.1 The services that general government provides to households comprise individual services and collective services. Individual services are the services that general government provides to specific identifiable households – that is, services, such as health and education, which are consumed by households individually. Collective services are those that general government provides simultaneously to all members of the community – that is, services, such as defence and public order and safety, which are consumed by households collectively. The principal individual services are covered elsewhere in the manual: health in Chapter 7 and education in Chapter 8. Collective services are covered in this chapter.

9.2 Expenditure on collective services by general government is called *collective consumption expenditure by government*. It is one of the seven main aggregates in the Eurostat-OECD expenditure classification and its share of GDP is around 8 or 9 per cent in most EU Member States and OECD Member Countries. *General government* is the term used in the SNA 93<sup>1</sup> and the ESA 95<sup>2</sup> to describe the institutional sector that consists of central, regional, state and local government units together with the social security funds controlled by these units. Non-profit institutions engaged in non-market production that are controlled and mainly financed by government units or social security funds are also included in the general government sector. Throughout this chapter *government* means *general government* unless specifically stated otherwise.

9.3 The chapter explains how PPPs for collective consumption expenditure by government are obtained within the framework of a Eurostat and OECD comparison. It starts by defining the services covered by the aggregate. This is followed by an outline of the basic methodology. The chapter continues by describing the survey of compensation of employees which is the only price collection conducted specifically for the calculation of PPPs for government expenditure. It concludes with a brief discussion on productivity differences.

## 9.2 Collective services

9.4 Collective services are comprehensively defined in COFOG 98<sup>3</sup> and these are the definitions that are followed in the Eurostat-OECD expenditure classification. Broadly speaking, collective services are general public services, defence, public order and safety, economic affairs, environment protection, and housing and community amenities. Box 9.1 gives a more precise definition in terms of COFOG groups. All the shaded COFOG groups are collective services. They include the research and development (R&D) for individual services.<sup>4</sup> They include as well the overall policy-making, planning, regulatory, budgetary, co-ordinating and monitoring responsibilities of ministries overseeing individual services. These activities, unlike the services to which they relate, cannot be identified with specific individual households and are considered to benefit households collectively.

<sup>1</sup> *System of National Accounts 1993*, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank, 1993.

<sup>2</sup> *European System of Accounts 1995*, Eurostat, Luxembourg, 1996.

<sup>3</sup> "Classification of the Functions of Government (COFOG)", *Classification of Expenditure According to Purpose*, United Nations, New York, 2000.

<sup>4</sup> As stated in Chapter 4, most participating countries will have adopted the SNA 2008 or the ESA 2010 by 2014 and, as a result, a significant portion of government expenditure on R&D for both collective and individual services will be removed from intermediate consumption and reclassified as gross fixed capital formation.

**Box 9.1:** Collective services (CS) and individual services (IS)

COFOG 98 Groups	COFOG 98 Groups
<b>01. GENERAL PUBLIC SERVICES</b>	<b>06. HOUSING &amp; COMMUNITY AMENITIES</b>
01.1 Executive & legislative organs, financial & fiscal affairs, external affairs (CS)	06.1 Housing development (CS)
01.2 Foreign economic aid (CS)	06.2 Community development (CS)
01.3 General services (CS)	06.3 Water supply (CS)
01.4 Basic research (CS)	06.4 Street lighting (CS)
01.5 R&D General public services (CS)	06.5 R&D Housing & community amenities (CS)
01.6 General public services n.e.c. (CS)	06.6 Housing & community amenities n.e.c. (CS)
01.7 Public debt transactions (CS)	<b>07. HEALTH</b>
01.8 Transfers of a general character between different levels of government (CS)	07.1 Medical products, appliances & equipment (IS)
<b>02. DEFENCE</b>	07.2 Out-patient services (IS)
02.1 Military defence (CS)	07.3 Hospital services (IS)
02.2 Civil defence (CS)	07.4 Public health services (IS)
02.3 Foreign military aid (CS)	07.5 R&D Health (CS)
02.4 R&D Defence (CS)	07.6 Health n.e.c. (CS)
02.5 Defence n.e.c. (CS)	<b>08. RECREATION, CULTURE &amp; RELIGION</b>
<b>03. PUBLIC ORDER &amp; SAFETY</b>	08.1 Recreational & sporting services (IS)
03.1 Police services (CS)	08.2 Cultural services (IS)
03.2 Fire-protection services (CS)	08.3 Broadcasting & publishing services (CS)
03.3 Law courts (CS)	08.4 Religious & other community services (CS)
03.4 Prisons (CS)	08.5 R&D Recreation, culture & religion (CS)
03.5 R&D Public order & safety (CS)	08.6 Recreation, culture & religion n.e.c. (CS)
03.6 Public order & safety n.e.c. (CS)	<b>09. EDUCATION</b>
<b>04. ECONOMIC AFFAIRS</b>	09.1 Pre-primary & primary education (IS)
04.1 General economic, commercial & labour affairs (CS)	09.2 Secondary education (IS)
04.2 Agriculture, forestry, fishing & hunting (CS)	09.3 Post-secondary non-tertiary education (IS)
04.3 Fuel & energy (CS)	09.4 Tertiary education (IS)
04.4 Mining, manufacturing & construction (CS)	09.5 Education not definable by level (IS)
04.5 Transport (CS)	09.6 Subsidiary services to education (IS)
04.6 Communication (CS)	09.7 R&D Education (CS)
04.7 Other industries (CS)	09.8 Education n.e.c. (CS)
04.8 R&D Economic affairs (CS)	<b>10. SOCIAL PROTECTION</b>
04.9 Economic affairs n.e.c. (CS)	10.1 Sickness & disability (IS)
<b>05. ENVIRONMENT PROTECTION</b>	10.2 Old age (IS)
05.1 Waste management (CS)	10.3 Survivors (IS)
05.2 Waste water management (CS)	10.4 Family & children (IS)
05.3 Pollution abatement (CS)	10.5 Unemployment (IS)
05.4 Protection of biodiversity & landscape (CS)	10.6 Housing (IS) <sup>1</sup>
05.5 R&D Environment protection (CS)	10.7 Social exclusion n.e.c. (IS)
05.6 Environment protection n.e.c. (CS)	10.8 R&D Social protection (CS)
	10.9 Social protection n.e.c. (CS)

<sup>1</sup> In the Eurostat-OECD classification of final expenditure on GDP, housing is not included under social protection. Instead, both are identified as separate expenditure categories.

9.5 Collective services are produced by government. Because they are supplied free or at prices that are not economically significant, the services are called *non-market services*<sup>5</sup> and government, as their producer, is considered a *non-market producer*. Economically-significant prices are prices that determine the amounts producers supply and purchasers buy<sup>6</sup> and, as such, they can be used to value the outputs of market producers by multiplying the quantities produced by the prices at which they are sold. The absence of economically-significant prices for non-market services means that it is not possible to value the outputs of non-market producers in the same way as the outputs of market producers are valued. Because of this, national accountants have adopted the convention of valuing the outputs of non-market producers by totalling up the costs to produce them. The value of the output of non-market producers is equal to the sum of their expenditures on the non-market services they produce or, if there have been sales, to the sum of their expenditures less the value of their sales. Consistency with the prices underlying these expenditures is maintained by using the prices of inputs to calculate the PPPs for non-market services. This is called the *input-price approach*.

### 9.3 Input-price approach

9.6 The input-price approach requires a breakdown of the expenditure on non-market services by the following basic cost components: compensation of employees, intermediate consumption, gross operating surplus, net taxes on production and receipts from sales. The breakdown is based on the assumption that the data will be taken from the government production account. Receipts from sales is required to net off gross output to obtain government final consumption expenditure on the production of these services. Gross operating surplus and net taxes on production are included for completeness. In practice, gross operating surplus will be equal to consumption of fixed capital since net operating surplus is expected to be negligible.

9.7 Of the cost components, compensation of employees is by far the largest and most important. It accounts on average for over 50 per cent of government expenditure on collective services in EU Member States and OECD Member Countries. For the input-price approach, prices are collected only for compensation of employees. Prices are not collected for the other cost components, so no PPPs are calculated for them and, as explained below, reference PPPs are used instead.

9.8 Box 9.2 shows the actual cost structure used for collective services in Eurostat and OECD comparisons. Defence expenditures are separated from expenditures on other collective services. Expenditures on compensation of employees and intermediate consumption are divided according to whether or not they relate to defence. Originally it was intended that the PPPs applied to defence expenditures would be different from those applied to expenditures on other collective services. This has only been possible for intermediate consumption. Collecting the compensation of employees paid to defence personnel has not proved feasible for a number of reasons, including the comparability of equivalent ranks across countries and the confidentiality surrounding their pay and allowances, and is no longer attempted. The collection of compensation of employees is limited to a selection of occupations employed in the production of other collective services.

9.9 As stated already, no prices are collected for the six shaded basic headings in Box 9.2. The PPPs for these basic headings are based on price data, but price data that have been collected for other basic headings. Such PPPs are called *reference PPPs*. They are taken from elsewhere in the comparison to serve as proxies for the PPPs that would have been calculated for the basic headings had prices been collected for them. Reference PPPs are discussed in Chapter 12, Section 12.3.4.

<sup>5</sup> They are also called *comparison resistant services* because not only do they have no economically-significant prices with which to value output, their units of output cannot be otherwise defined and measured, the institutional arrangements for their provision and the conditions of payment differ from country to country, and their quality varies between countries but the differences cannot be identified and quantified.

<sup>6</sup> Or, as defined in the ESA 95, prices that cover over 50 per cent of the costs of production.

**Box 9.2:** Collective services by basic heading

BH Code	Basic heading	PPPs used
14.01.11.1	Compensation of employees (collective services relating to defence)	PPP for compensation of employees (collective services other than defence)
14.01.11.2	Compensation of employees (collective services other than defence)	<i>PPPs calculated with prices from the annual survey of compensation of government employees</i>
14.01.12.1	Intermediate consumption (collective services relating to defence)	PPPs for gross fixed capital formation in machinery and equipment
14.01.12.2	Intermediate consumption (collective services other than defence)	PPPs for individual market consumption (see Box 13.3B for coverage)
14.01.13.1	Gross operating surplus	PPPs for gross fixed capital formation
14.01.14.1	Net taxes on production	PPPs for production of collective services by government (without net taxes on production and receipts from sales)
14.01.15.1	Receipts from sales	PPPs for production of collective services by government (without receipts from sales)

9.10 The reference PPPs used for collective services are listed in Box 9.2. The choice of reference PPP is self-explanatory in most cases. For example, the reference PPPs for gross operating surplus - which in practice equals consumption of fixed capital since net operating surplus is generally minimal - are the PPPs for gross fixed capital formation. The choice of the PPPs for gross fixed capital formation in machinery and equipment as the reference PPPs for the intermediate consumption of collective services relating to defence is less evident. The explanation is that the major part of intermediate consumption of defence consists of expenditure on machinery and equipment that are not dual purpose – that is, they are for military use only and cannot be put to civilian use as well. Such expenditure is classified as intermediate consumption - and not as gross fixed capital formation - in the SNA 93 and the ESA 95.<sup>7</sup>

## 9.4 Survey of compensation of government employees

9.11 The basic heading that is not shaded in Box 9.2 covers the compensation paid to government employees producing collective services other than defence services. PPPs for this basic heading are calculated with the compensation of employees that participating countries are required to report for a selection of occupations employed in the production of these collective services. Each year, at the end of February of t+1, an electronic questionnaire is sent to participating countries asking for the compensation of employees and other related data for each occupation selected. Information is requested for three years: t, t-1 and t-2. There is a reporting form for each year. An example of the reporting form is shown in Box 9.3A.

9.12 Seventeen occupations are listed in column 6 of the reporting form in Box 9.3A: six in public order and safety, eleven in other collective services not elsewhere classified (n.e.c.). The occupations have been selected because they are comparable across countries and are generally representative within them. The occupations are defined using job descriptions taken from the ISCO-

<sup>7</sup> When participating countries adopt the SNA 2008 or the ESA 2010, all expenditure on military machinery and equipment, irrespective of whether or not the machinery and equipment are dual purpose, will be classified as gross fixed capital formation. And, as pointed out in Chapter 4, Section 4.5.1, this will make the split between defence and other collective services redundant.

08<sup>8</sup>. These descriptions specify the occupations in terms of the kind of work done. A table cross-referencing the occupations and their ISCO job descriptions is given in Box 9.4. In the questionnaire, the table has hyperlinks to the job descriptions such as that for a statistician in Box 9.5. Each occupation is also defined by a skill level. It indicates the minimum level of education that a person should have to carry out the tasks and duties of the occupation. Four broad skill levels are defined in ISCO-08 based on ISCED-97<sup>9</sup>. These are given in Box 9.6.

9.13 The compensation of employees that participating countries are to report for each occupation is defined in Box 9.7. It comprises gross salaries and wages (that is, the basic salary or wage, plus other cash payments over and above the basic salary or wage, plus benefits in kind, and before the deduction of tax or social contributions payable by the employee), employers' actual social contributions and employers' imputed social contributions. The definition is consistent with that of the SNA 93 and the ESA 95 except for the exclusion from gross salaries and wages of overtime payments. Experience has shown that it is too difficult to obtain data on overtime that are comparable across countries. This results in volume measures that are marginally inflated, but their comparability is judged to be improved by ignoring overtime.

9.14 In addition, the compensation of employees reported for the occupations should be the annual averages. They should also be national averages taking into account the differences in compensation paid by central, regional, state and local governments as well as the differences between ministries and departments within the same level of government.

9.15 When completing the reporting form in Box 9.3A, participating countries are only required to fill in the fields highlighted in blue. How this is to be done is explained in Box 9.3B. Fields that are not highlighted in blue are not to be touched. Those in columns 11, 13, 14, 18 and 19 are programmed to complete themselves on the basis of what is recorded in the highlighted fields. Hence, for each occupation, the values for employers' actual and imputed social contributions in columns 11 and 13 will be calculated from the average annual gross salary in column 9 and the national accounts ratios in columns 10 and 12. The annual average compensation in column 14 will then be computed as the sum of the average annual gross salary in column 9 and the values for social contributions in columns 11 and 13.

9.16 The annual average compensation in column 14 is not comparable across countries because it has not been adjusted for differences between countries in the number of hours worked. To make this adjustment, the number of annual contractual hours actually worked has to be established. This is done using the information on the number of contractual hours worked per week (column 15) and the number of working days not worked through holiday entitlement (column 16) or through public holidays falling on working days (column 17). The formula applied is:  $(52 \times X) - [(X/5) \times (Y+Z)]$  where X is the number of contractual hours worked per week, Y is the number of working days of holiday entitlement and Z is the number of public holidays falling on working days. It gives the number of annual contractual hours worked in column 18.

9.17 The next step is to obtain an hourly rate of annual average compensation by dividing the annual average compensation in column 14 by the annual contractual hours worked in column 18. The hourly rate is then multiplied by 1710 hours<sup>10</sup> which is the norm used in Eurostat and OECD comparisons to standardise compensation of employees across participating countries. This gives the adjusted annual average compensation in column 19. It is the adjusted compensation that is used to calculate the PPPs for the basic heading covering the compensation of employees paid by government to those producing collective services other than defence services.

<sup>8</sup> International Standard Classification of Occupations 2008, International Labour Office, Geneva.

<sup>9</sup> *International Standard Classification of Education 1997*, United Nations Educational, Scientific and Cultural Organization, Paris.

<sup>10</sup> 52 working weeks, each of 38 hours duration, less 7 working weeks (or 35 working days) of paid leave and public holidays.

## Box 9.3A: Reporting form for the survey of compensation of government employees (collective services)

SURVEY OF COMPENSATION OF GOVERNMENT EMPLOYEES																			
Country:		Year:		2012															
<i>only the shaded fields are to be filled in by the countries</i>																			
Basic heading code Basic heading	Weight group	Percentage weight within the basic heading	Occupation code	Occupation (see Box 9.4 for references to ISCO-08)	Requested skill level	Observed skill level	Average annual gross salary	Employers' actual social contributions		Employers' imputed social contributions		Annual average compensation	Contractual working week (number of hours)	Holiday entitlement (number of days)	Public holidays (number of days)	Annual contractual hours worked	Adjusted annual average compensation		
								national accounts ratio	value	national accounts ratio	value								
(1)(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)		
				<b>EXAMPLE</b>	4	4	10000	10%	1000	5%	500	11500	37,5	30	10	1650	11918		
14.01.11.2 Other collective services	Public order and safety		14.01.11.2.01.aa	Judge	4				0		0	0				0	0		
			14.01.11.2.01.ab	Law clerk	3				0		0	0					0	0	
			14.01.11.2.01.ac	Police inspector	3				0		0	0					0	0	
			14.01.11.2.01.ad	Police officer	2				0		0	0					0	0	
			14.01.11.2.01.ae	Fire-fighter	2				0		0	0					0	0	
			14.01.11.2.01.af	Prison guard	2				0		0	0					0	0	
	Other Collective services n.e.c.			14.01.11.2.02.ba	Statistician	4				0		0	0				0	0	
				14.01.11.2.02.bb	Database administrator	4				0		0	0					0	0
				14.01.11.2.02.bc	Executive official	3				0		0	0					0	0
				14.01.11.2.02.bd	Customs inspector	3				0		0	0					0	0
				14.01.11.2.02.be	Tax officer	3				0		0	0					0	0
				14.01.11.2.02.bf	Computer operator	3				0		0	0					0	0
				14.01.11.2.02.bg	Secretary	2				0		0	0					0	0
				14.01.11.2.02.bh	Maintenance electrician	2				0		0	0					0	0
				14.01.11.2.02.bi	Driver	2				0		0	0					0	0
				14.01.11.2.02.bj	Building caretaker	1				0		0	0					0	0
				14.01.11.2.02.bk	Cleaner	1				0		0	0					0	0



**Box 9.3B:** Completing the reporting form

<b>Percentage weight within the basic heading</b> (column 4)	The occupations listed for the basic heading are divided into two groups: those working in public order and safety and those working in other collective services n.e.c. Countries are required to provide the weight that each group has within the basic heading. The weights should be expressed as percentages: for example, 55 per cent public order and safety, 45 per cent other collective services n.e.c. They should be expenditure shares, but if expenditures shares are not available, weights based on the numbers employed in each group should be given instead. If neither expenditure nor employment shares are available, countries should estimate the weights by other means and explain the basis of the estimate.
<b>Observed skill level</b> (column 8)	The skill level associated with an occupation is given in column 7. Countries are required to provide the average annual gross salary for the skill level indicated and to report that they have done so in column 8. In other words, the requested skill level indicated in column 7 and the observed skill level recorded in column 8 should be the same. It may not always be possible to provide the average annual gross salary for the skill level indicated because only higher or lower skill levels are found for the occupation or because skill level information is not available. In the first situation, the actual skill level found should be reported in column 8; in the second, the education level of job holders can be used as a proxy for skill level and reported in column 8.
<b>Average annual gross salary</b> (column 9)	The average annual gross salary to be reported for an occupation is that defined in Box 9.7. It is the amount paid for contractual working hours and excludes payments for overtime. If it is not possible to exclude overtime, it is necessary to include the hours of overtime worked when reporting contractual working time in column 15. Countries should obtain the average annual gross salary from one of the following sources that are listed in order of preference: government payroll records, statistical surveys such as a structure of earnings surveys, government salary scales, other suitable statistical or administrative source.
<b>Employers' actual social contributions</b> (column 10)	Countries should report the employers' actual social contributions for an occupation as a ratio of its average annual gross salary in column 9. The ratio is to be extracted from the national accounts. As the national accounts do not usually provide actual social contribution rates at occupation level, the ratio will refer to a higher level of aggregation. Countries will have to use the ratio for the level of aggregation that comes closest to the occupation. The reporting form is programmed to complete column 11 by applying the ratio in column 10 to the average annual gross salary recorded for the occupation in column 9.
<b>Employers' imputed social contributions</b> (column 12)	Countries should report the employers' imputed social contributions for an occupation as a ratio of its average annual gross salary in column 9. The ratio is to be extracted from the national accounts. As the national accounts do not usually provide imputed social contribution rates at occupation level, the ratio will refer to a higher level of aggregation. Countries will have to use the ratio for the level of aggregation that comes closest to the occupation. The reporting form is programmed to complete column 13 by applying the ratio in column 12 to the average annual gross salary recorded for the occupation in column 9.
<b>Contractual working week</b> (column 15)	Countries should report for each occupation the number of hours to be worked per week as specified in the contract between the government as an employer and the employee. These hours are not necessarily the actual number of hours worked as overtime is not to be included. If it has not be possible to exclude overtime payments from the average annual gross salary in column 9, the average number of hours of overtime worked per week should be added to the number of contractual hours worked per week.
<b>Holiday entitlement</b> (column 16)	For each occupation, countries should report the number of working days of holiday entitlement. This is usually specified in the contract between the government as an employer and the employee. Public holidays are not to be included.
<b>Public holidays</b> (column 17)	For each occupation, countries should report the number of days of public holidays that fall on working days during the reference year.

**Box 9.4:** References to ISCO-08

Code	Occupation	Skill level	ISCO-08	
14.01.11.2.01.aa	Judge	4	2612	Judges
14.01.11.2.01.ab	Law clerk	3	3411	Legal and related associated professionals
14.01.11.2.01.ac	Police inspector	3	3450	Police inspectors and detectives
14.01.11.2.01.ad	Police officer	2	5412	Police officers
14.01.11.2.01.ae	Fire-fighter	2	5411	Fire-fighters
14.01.11.2.01.af	Prison guard	2	5413	Prison guards
14.01.11.2.02.ba	Statistician	4	2120	Mathematicians, actuaries and statisticians
14.01.11.2.02.bb	Database administrator	4	2521	Database designers and administrators
14.01.11.2.02.bc	Executive official	3	3343	Administrative and executive secretaries
14.01.11.2.02.bd	Customs inspector	3	3351	Customs and border inspectors
14.01.11.2.02.be	Tax officer	3	3352	Government tax and excise officials
14.01.11.2.02.bf	Computer operator	3	3511	Information and communications technology operations technicians
14.01.11.2.02.bg	Secretary	2	4120	Secretaries (general)
14.01.11.2.02.bh	Maintenance electrician	2	7411	Building and related electricians
14.01.11.2.02.bi	Driver	2	8322	Car, taxi and van drivers
14.01.11.2.02.bj	Building caretaker	1	5153	Building caretakers
14.01.11.2.02.bk	Cleaner	1	9112	Helpers and cleaners in offices, hotels and other establishments

**Box 9.5:** Example of an ISCO 08 occupation description**2120 Mathematicians, actuaries and statisticians**

Mathematicians, actuaries and statisticians conduct research and improve or develop mathematical, actuarial and statistical concepts, theories and operational methods and techniques and advise on or engage in their practical application in such fields as engineering, business and social and other sciences.

Tasks include -

- (a) studying, improving and developing mathematical, actuarial and statistical theories and techniques;
- (b) advising on or applying mathematical principles, models and techniques to a wide range of tasks in the fields of engineering, natural, social or life sciences;
- (c) conducting logical analyses of management problems, especially in terms of input-output effectiveness, and formulating mathematical models of each problem usually for programming and solution by computer;
- (d) designing and putting into operation pension schemes and life, health, social and other types of insurance systems;
- (e) applying mathematics, statistics, probability and risk theory to assess potential financial impacts of future events;
- (f) planning and organizing surveys and other statistical collections, and designing questionnaires;
- (g) evaluating, processing, analyzing, and interpreting statistical data and preparing them for publication;
- (h) advising on or applying various data collection methods and statistical methods and techniques, and determining reliability of findings, especially in such fields as business or medicine as well as in other areas of natural, social or life sciences;
- (i) preparing scientific papers and reports;
- (j) supervising the work of mathematical, actuarial and statistical assistants and statistical clerks.

Examples of the occupations classified here: Actuary; Operations research analyst; Demographer; Mathematician; Statistician.

This item excludes - some related occupations classified elsewhere: Actuarial assistant – 3314; Mathematical assistant – 3314; Statistical assistant- 3314; Actuarial clerk – 4312; Statistical clerk – 4312; Information systems analyst - 2511

**Box 9.6: Skill levels of ISCO-08**

Skill level	Definition
1	Primary level education which generally begins at the age of 5, 6 or 7 and lasts about five years.
2	First stage of secondary education which begins at the age of 11 or 12 and lasts about three years, followed by the second stage of secondary education which begins at the age of 14 or 15 and also lasts about three years. A period of on-the-job training and experience may be necessary, sometimes formalised in an apprenticeship.
3	Education which begins at the age of 17 or 18, lasts about four years and leads to an award which is not equivalent to a first university degree.
4	Education which begins at the age of 17 or 18, lasts for three or more years and leads to a first university degree or postgraduate degree.

**Box 9.7: Compensation of employees**

**Compensation of employees** includes all payments in cash and kind made by general government in a year. These payments in cash and kind comprise:

- **Gross salaries and wages** (before deduction of taxes and social contributions payable by employees) covering:
  - Basic salaries and wages;
  - Other cash payments, over and above the basic salary or wage, such as: cost of living allowances, local allowances, expatriation allowances, housing allowances, allowances for transport to and from work, holiday pay, 13<sup>th</sup> to 14<sup>th</sup> month pay and other bonuses, acting and special duty allowances, enhanced rates of pay for overtime, night work, weekend work, and work in disagreeable or hazardous circumstances. Note that as it is difficult to obtain data on overtime payments that are comparable across countries, overtime payments are not to be included when calculating the gross salaries and wages of selected occupations for Eurostat and OECD comparisons.
  - Benefits in kind - that is, goods and services that are provided free or at reduced prices to employees by employers - such as subsidised canteens, subsidised housing, the provision of sport, recreation or holiday facilities, transportation to and from work, car parking, crèches for employees' children, company cars for personal use, uniforms or other forms of special clothing which employees choose to wear outside the workplace as well as work.
- **Employers' actual social contributions** consisting of the payments made by general government institutions to insurers for the benefit of their employees. These payments cover contributions for old age pensions, as well as for insurance against sickness, accident and disability. They are calculated on the basis of the schemes in operation in the various countries.
- **Employers' imputed social contributions** representing the counterpart to social benefits paid directly by general government institutions without participating in, or establishing a fund, reserve or other special scheme for this purpose. Since these contributions do not involve actual cash flows, they have to be imputed. The imputations have to be done in line with the corresponding imputations made in the national accounts.

9.18 Completed reporting forms for t-2, t-1 and t should be returned to Eurostat by 30 June t+1.<sup>11</sup> Before returning the forms, participating countries should carry out two edits. The questionnaire provides a summary sheet to facilitate both. The first is to check the internal coherency of the data set for each of the three years covered in the questionnaire. For example, it is usually the case that judges earn more than most, if not all, of the occupations specified; that police inspectors earn more than police officers, fire-fighters and prison guards; that executive officials customs inspectors and tax officers earn similar amounts; and that maintenance electricians and drivers earn more than building caretakers and cleaners. Income differentials between occupations that are contrary to expectations should be verified. Errors identified in this way should be corrected. The second edit is to check the consistency of the compensation of employees reported over the three years covered in the questionnaire. Some differences can be expected between three data sets usually because there have been pay increases, although not necessarily for all the occupations listed. Discrepancies that cannot be explained in this way should be verified and errors corrected. Note that it may just be one year that is wrong, but it could also be that all three years are wrong.

9.19 On receipt of the reporting forms, Eurostat<sup>12</sup> will repeat these two edits and undertake two others. The first involves comparing the responses to the current questionnaire with the responses to the questionnaire of the previous survey. The second consists of checking the ratios reported for employers' actual and imputed social contributions against the ratios in the in-house national accounts database. Countries are asked to explain or correct the discrepancies observed. Eurostat will also apply the Quaranta editing procedure to compare the price levels of the compensation of employees reported for the selected occupations across countries. The outliers identified through this procedure will be returned to the countries reporting them for verification. Countries are required to either correct the compensation of employees originally reported or to confirm that they are correct.

## 9.5 Productivity differences

9.20 The input-price approach as applied by Eurostat and the OECD does not take into account differences in productivity between government producers of collective services in different countries. It assumes that the producers are equally efficient and that the same level of input will yield the same volume of output regardless of the country in which the producer is operating. This assumption might be tenable when countries are at similar levels of economic development, but, when levels of economic development vary to the extent they do among countries participating in Eurostat and OECD comparisons, the assumption is difficult to defend and the anomalies it gives rise to have at least to be recognised.

9.21 Some of the differences in the per capita volume indices for collective services are real differences that can be explained by the varying political, cultural, demographic and institutional circumstances of the countries. Others are not real. They arise because the productivity differences that exist between the producers of collective services in the countries were not taken into account when the indices were calculated. Differences in productivity are being disguised as price differences. When this happens, the volumes of output of producers in countries whose cost of inputs are relatively low are being overestimated and the volumes of output of producers in countries whose cost of inputs are relatively high are being underestimated.

9.22 Failure to take account of productivity differences between the producers of collective services in different countries does not only affect the PPPs and volume indices for collective services. It also affects the PPPs and volume indices of GDP. It is the effect on the volume indices of GDP that is the primary concern. Productivity differences are not specifically a problem for international spatial comparisons. They are also a problem for national temporal comparisons. But it is a much more serious problem for international comparisons. Differences in the productivity of producers of collective services between countries are significantly larger than the year-to-year changes in productivity of producers of collective services of individual countries.

<sup>11</sup> The completed questionnaire should be imported into the Data Entry Tool (DET) that converts the file to the standard xml format. The dataset needs to be finalised in the DET before submission to Eurostat via eDAMIS.

<sup>12</sup> Or, more precisely, the contractor to whom Eurostat has outsourced the task of conducting, validating and processing the survey.

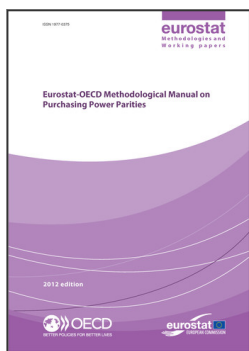
9.23 One solution would be to complement the input-price approach with adjustments for differences in productivity.<sup>13</sup> But EU Member States and OECD Member Countries have not been in favour of such adjustments being made in Eurostat and OECD comparisons. They argue that there are no generally agreed methods for making such adjustments and that those proposed are based on assumptions which are difficult to verify in practice.

9.24 Efforts by Eurostat and the OECD to develop alternatives to the input-price approach have concentrated on non-market health and education services. New methods focusing on output are explained in Chapters 7 and 8. With regard to collective services, it is unlikely that either Eurostat or the OECD will find an acceptable replacement for the input-price approach in the foreseeable future.

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<sup>13</sup> See *Purchasing Power Parities for Non-Market Services: An Assessment of Alternative Methods*, E. Dean, unpublished paper presented at the Conference of the International Comparison Programme, World Bank, Washington, March 2002.





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