

# **ECONOMIC PAPERS**

Number 146

October 2000

## **ECFIN's Effective tax rates. Properties and Comparisons with other tax indicators <sup>1</sup>**

by

**Carlos Martinez-Mongay <sup>2</sup>**

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<sup>1</sup> Comments, suggestions and valuable help from A. Brunila, M. Buti, D. Costello, G. Carone, H. Huizinga, J. In't Veld, T. Jaegers, M. Thiel and D. Young are gratefully acknowledged. I especially thank R. Fernandez for editorial help and assistance. Indeed, any error remains the exclusive responsibility of the author. The views expressed in this paper should not be attributed to the European Commission or its services.

<sup>2</sup> Head of Sector, Directorate for Economic and Financial Affairs, European Commission  
ECFIN C-2, BU-1, 0/115  
Rue de la Loi 200, B-1049 Brussels  
Tel: +32 2 29 61228  
Fax: +32 2 29 93502  
Email: [carlos.martinez@cec.eu.int](mailto:carlos.martinez@cec.eu.int)





## EXECUTIVE SUMMARY

The assessment and monitoring of the effects of various tax reforms in Member States has become a key policy concern in the Community. In the Presidency Conclusions of the Lisbon European Council on 23-24 March 2000, the European Council requested the Council and the Commission to assess “*the contribution of public finances to growth and employment, and assessing, on the basis of comparable data and indicators, whether adequate concrete measures are being taken in order to ... alleviate the tax pressure on labour ...*”. Such an evaluation needs an accurate, timely and comparable system of tax indicators enabling the Commission and the Council to quantify the early impact of tax reforms on the tax rates on labour, capital and consumption. This paper presents a proposal for such a system, discusses its properties and compares it with other available sets of tax rates.

The most operational approach to analysing the effects of tax reforms is to construct synthetic tax indicators, so-called “effective” or “implicit” tax rates. These are calculated as the ratios between the tax revenues from particular taxes and the corresponding tax bases obtained from national accounts. Such tax rates are published by several institutions. In ‘*Structures of the Taxation Systems in the European Union*’, the European Commission publishes “implicit” tax rates on employed labour, consumption and other production factors for the 15 Member States and several EU aggregates. The OECD has also published series of effective tax rates on labour, capital and consumption for OECD countries up to 1997. In ‘*Public Finances in EMU –2000*’, DG ECFIN calculated and analysed series of effective rates on labour, capital and consumption over the period 1970-2001. Such rates were used to assess the impact of tax reforms on the tax burdens on labour, capital and consumption over the period 1999-2001.

The paper gives detailed account of the definitions and statistical sources used by ECFIN services. ECFIN’s tax rates can be calculated using input data from AMECO, combined with a small amount of auxiliary information available in the OECD databank ‘*Revenue Statistics*’. This has the advantage of providing a complete, transparent, replicable and internationally comparable (including non-EU countries) set of tax indicators which can regularly be updated on the basis of Commission Spring and Autumn forecasts. ECFIN indicators allow for an assessment of tax reforms in Member States in terms of the changes in the effective rates of non-wage labour costs, personal income taxes, direct taxes on labour and on employed labour, direct taxes on capital, and consumption taxes. ECFIN indicators also allow for carrying out sensibility analyses of such assessments in function alternative definitions of the tax bases for labour, capital and consumption. ECFIN databank on effective taxation also includes an indicator of the total tax wedge of labour, which is regularly published in the Commission Spring and Autumn forecasts.

The possibilities offered by ECFIN’s effective tax rates are not free of costs. While the rates published in ‘*Structures of the Taxation Systems in the European Union*’ and, to a lesser extent, those calculated by the OECD, use very detailed information and definitions endorsed by the Member States representatives, ECFIN definitions are in some cases approximations forced by data limitations in AMECO. In other words, ECFIN effective tax rates give early information about the impacts of tax reforms, but they may be second-best proxies to the “true” effective tax rates. The question

therefore arises whether using such proxies would have sizeable consequences as regards the assessments of tax reforms.

This paper shows that, where the relative levels and general evolution of labour, capital and consumption tax rates are concerned, the conclusions drawn on the basis of ECFIN's rates are robust with respect to alternative definitions used by the OECD and by '*Structures of the Taxation Systems in the European Union*'. As a general rule, divergences between the different approaches are either negligible or relatively small. This is particularly true in the case of labour and consumption taxes. Where capital taxes are concerned, some significant differences may appear in some countries and periods, especially between ECFIN and the '*Structures of the Taxation Systems in the European Union*'. Similarities apply to a wide range of statistical properties of the tax rates. These include across-country relative levels of the tax burdens and their changes, as well as the relative position of the countries in orderings obtained on the basis of tax rates. They also include within-country comparisons on the basis of time series analyses, where the series of tax rates are expressed in growth rates. Finally, comparisons of the relationships between tax rates and investment, growth and (un)employment performance also suggest that ECFIN rates reproduce the same effects that those of the OECD and the '*Structures of the Taxation Systems in the European Union*'.

Broadly speaking, the tax burdens on labour and consumption in most EU countries are higher than in the US or Japan. However, the tax burden on capital income is much more comparable across OECD countries. Over the last three decades, in parallel with a steady increase of the total tax burden in most OECD countries, a tax shift to labour has taken place, with labour income bearing the bulk of the additional tax burden. However, the tax burdens on capital income and consumption have remained broadly stable or recorded small changes. In the late 1990's, there are signs of a reversal of the trend in favour of lower labour tax rates. Overall, the lowering of personal income taxes seems to be the strategy chosen by Member States to reduce the tax burden on labour. During the last thirty years, a clear convergence of tax systems within the OECD has taken place, with tax systems becoming more similar across countries. The lowest dispersion of tax rates is found in the case of capital, which is probably the result of enhanced international capital mobility and capital tax competition. In the case of consumption taxes, the convergence process is particularly strong within the EU and seems to be mainly caused by VAT harmonisation in the Community.

Distortionary effects of taxes on investment, growth and employment are also invariant with respect to alternative tax rates available in ECFIN, the OECD and in the '*Structures of the Taxation Systems in the European Union*'. Overall, labour and, especially, capital taxes have a negative impact on investment rates. They also negatively affect long-run growth rates, but the impacts are much lower. Finally, the effects of labour taxes on employment are ambiguous, suggesting that it is the interplay of taxation with labour market institutions that affects employment performance.

To conclude, given their timely availability together with the comparability within and outside the EU, the tax rates calculated by DG ECFIN on the basis of AMECO data are a valuable analytical tool, which complements the information in other databanks.

## 1. INTRODUCTION

The analyses of the structure of tax systems in the EU, as well as the assessment and monitoring of the effects of alternative tax reforms in Member States, have become key policy concerns in the Community. The DG ECFIN Report '*Public Finances in EMU – 2000*' (European Commission 2000a, -*PFR2000* hereafter) has shown that a tax cut of 1% of GDP would increase employment by 1.5 million jobs in the EU<sup>3</sup>. The European Council has reiterated the need of reducing the tax burden in the EU, especially on labour, in successive recommendations for the *Broad Guidelines of the Economic Policies of the Member States and the Community* (BEPGs)<sup>4</sup>, as well as in ordinary and extraordinary councils. The *Luxembourg Process*, on labour market reform, the *Cardiff Process*, on economic reform and the macro-economic dialogue under the *Cologne Process* have very much emphasised the need to reform tax systems in Member States. More recently, in the *Presidency Conclusions of the Lisbon European Council on 23-24 March 2000*, the European Council has requested the Council and the Commission to present a report by Spring 2001 "*assessing the contribution of public finances to growth and employment, and assessing, on the basis of comparable data and indicators, whether adequate concrete measures are being taken in order to ... alleviate the tax pressure on labour ...*".

The recommended reforms affect the whole tax system. However, there is not a unique programme to be implemented in all Member States. As shown in the *PFR2000*, although tax systems in Member States share broad common characteristics (viz. high tax burdens on labour and consumption), their structures largely differ from one country to another. Tax reforms must take into account such country-specific characteristics. Consequently, there is a need to agree on an accurate and comparable system of indicators representing such tax systems. This will allow Commission services to carry out quantitative assessments of the impact of alternative tax policies on the basis of tax rates on factor incomes (labour and capital) and consumption.

As proposed by Mendoza, Razin and Tesar (1994)<sup>5</sup> -MRT hereafter-, the most operational solution to the problem of analysing the effects of the changes in tax laws is to construct synthetic tax indicators -the so-called "effective" tax rates-. The methodology of effective taxation basically consists of defining the tax rate as the ratio between the tax revenues from particular taxes (viz. indirect taxes) and the corresponding tax bases (viz. value of final consumption) obtained from national accounts.

The same or similar methods are applied by several institutions and academics<sup>6</sup>. DG TAXUD, in cooperation with EUROSTAT, publishes the so-called "implicit" tax rates on employed labour, consumption and other production factors. Significant

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<sup>3</sup> Indeed, such an amount depends on which taxes are cut and how the corresponding revenue reduction is financed.

<sup>4</sup> See, for instance, the 'Commission Recommendation for the 2000 Broad Guidelines of the Economic Policies of the Member States and the Community' (see European Commission, 2000b; in particular, chapters 3.3 and 3.8).

<sup>5</sup> See also Mendoza, Milesi-Ferretti and Asea (1997).

<sup>6</sup> See Volkerink and de Haan (1999) and Fiorito and Padrini (2000).

differences notwithstanding, they are conceptually equivalent to those proposed by MRT. Such implicit tax rates, which are published by the European Commission in ‘Structures of the Taxation Systems in the European Union’ –*EC2000* hereafter<sup>7</sup>- are currently available for the 15 Member States until 1997. Closely following the MRT methodology, the OECD has also published series of effective tax rates on labour, capital and consumption for OECD countries until 1997 (see Carey and Tchilinguirian, 2000). DG ECFIN also calculates effective taxation indicators. After some preliminary assessments included in the ‘Report from the Commission on the Implementation of the 1999 Broad Economic Policy Guidelines’ (European Commission, 2000d) the ECFIN *PFR2000* analysed the effective tax burdens on labour, capital and consumption and assessed the impact of tax reforms on such tax burdens over the period 1999-2001<sup>8</sup>. In addition, the effective tax wedge on labour is regularly published in the Commission Spring and Autumn forecasts.

This paper explains and discusses in detail the method and information sources used by DG ECFIN to obtain the effective tax rates on labour, capital and consumption. The paper also compares the informative content of ECFIN effective tax rates with the implicit tax rates in *EC2000*, as well as average effective tax rates in the OECD, as published by Carey and Tchilinguirian (2000). Tax rates are calculated for the 15 Member States, the US, Japan, EUR-11 and EU-15 between 1970 and 2001. Section 2 summarises the essentials of the MRT method, compares it with other contributions, namely those of the OECD and *EC2000*, and gives an overview of the methodology followed in DG ECFIN. Section 3 focuses on non-wage labour costs. Section 4 calculates the effective tax rate on personal income, which, in combination with the indicators of non-wage labour costs, is used in section 5 to obtain the effective tax rate on labour. Two alternative, but equivalent, indicators for the effective tax rate on consumption are presented in section 6. Indicators in sections 3 to 6 are used in section 7 to calculate the total tax wedge on labour, while section 8 presents four different effective tax rates on capital income, which are based on the personal income tax rate discussed in section 4. Section 9 compares the informative content of such alternative indicators of tax burdens on labour, capital and consumption obtained in sections 3 to 8, while section 10 compares ECFIN indicators with the ones in the OECD and in *EC2000*. Section 11 represents a step forward in the analysis of tax reforms, which goes beyond the mechanical comparisons of tax rates and their evolution, and focuses on the quantification of efficiency and growth effects of tax reforms. Finally, section 12 summarises the conclusions of the paper. Several appendices present detailed tables of ECFIN’s effective tax rates and other useful information.

## **2. EFFECTIVE TAXATION METHODS. GENERALITIES**

Until the early nineties, the effects of taxes had usually been assessed on the basis of effective marginal tax rates and/or by looking at the evolution of tax revenues expressed in percentages of the GDP –tax ratios hereafter-. Marginal tax rates combine information on statutory tax rates, tax returns, and tax codes with data on income distribution and household surveys, as well as with projections of real present

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<sup>7</sup> European Commission (2000c).

<sup>8</sup> See European Commission (2000a) chapters IV.2 and IV.5.

values for investment projects. Unfortunately, the complexity of the tax systems makes constructing effective marginal tax rates extremely difficult, while the lack of data seriously limits the availability of series long enough as to allow for cross-country comparisons in the medium to long run.

The much simpler alternative to marginal tax rates, the tax ratios, is of valuable illustrative potential of the relative weight of taxes in an economy, and a useful tool to make comparisons across countries, but it does not have an immediate translation into the theoretical concepts applied in taxation models. For instance, the overall tax burden -the ratio of total tax revenues to GDP- is not a good proxy to the wedge imposed by taxes on any particular factor income because GDP is, by definition, the income jointly generated by labour and capital. Moreover, GDP ratios of the components of total tax revenues are also poor proxies of the burdens borne by the corresponding factors or commodities, since their changes may not only be caused by a change in statutory rates, but also by a change in the share of the corresponding tax bases in GDP, which may be independent of the tax laws.

The most operational solution to the problem of analysing the effects of the changes in tax systems is to construct synthetic indicators of broad, aggregate tax bases and tax rates. On the basis of data on actual tax payments and national accounts, MRT, following a seminal work by Lucas (1990), produced effective average tax rates for broad tax groups, which generate the majority of the government's tax revenues. Although less rigorous in their treatment of the economic effects of changes in tax laws than marginal tax rates, such effective average tax rates are consistent with the representative agent assumption and, by looking at the aggregate data, they also take account of the effective, overall tax burden resulting from each of the major tax categories on factors' income and consumption. In addition, the method is easier to implement in multi-country research projects because it exploits the international consistency of available data sources on national accounts and revenue statistics. The methodology of effective taxation basically consists of associating particular tax revenues with the corresponding tax bases obtained from national accounts. It constitutes a simple but powerful way to estimate the aggregate wedges imposed by taxes, namely the average effective tax wedges driven by taxes on production factors' incomes, as well as the tax wedge of indirect taxes between the consumer aggregate price index and the producer aggregate price index.

## **2.1 The MRT methodology**

MRT consider an economy with three goods -consumption, labour and capital-. In such an economy households decide how much to consume and how much labour and capital to provide, while firms produce the consumption good by using labour and capital supplied by households. Fiscal policy is represented by an allocation of total spending between consumption, labour and capital. Expenditures are financed by means of taxes on each good. Tax rates are meant to be proportional and the rates are expressed in units of the respective good. Within this framework, the authors show that the *ad valorem* tax rates on consumption, labour and capital can be represented by ratios where the numerator is, respectively, the difference between the pre-tax and the post-tax valuation of consumption, labour income and capital income, while denominators are, respectively, the value of consumption, labour income and capital



income at pre-tax prices. The difference between the pre-tax and the post-tax values turn out to be the revenues obtained by the government from each tax category, while the denominators are the pre-tax value of the corresponding tax base. Therefore, such *ad valorem* rates can be calculated by obtaining reliable measures of the macroeconomic tax revenues and tax bases.

MRT, have exploited the information available in the OECD databanks '*Revenue Statistics*' -OECDRS hereafter-, '*National Accounts. Main Aggregates*' –NAMA-, and '*National Accounts. Detailed Tables*' –NADT- to obtain the series of effective tax rates on labour, capital and consumption for OECD countries. MRT definitions can be summarised as follows:

*MRT effective tax rate on labour income*

$$\tau_l = (RS2000 + RS3000 + \tau_h * W) / (W + RS2200) \quad (1)$$

where RS2000 is total social security contributions, RS3000 is taxes on payroll and workforce, RS2200 is social security contributions paid by the employers, -the three of them available in OECDRS-, and W stands for wages and salaries of dependent employment -available in NAMA-, while  $\tau_h$  is the effective tax rate on personal income, calculated as:

$$\tau_h = RS1100 / (OSPUE + PEI + W) \quad (2)$$

where RS1100 is taxes on income, profit and capital gains of individuals or households –available in OECDRS-, OSPUE is the operating surplus of unincorporated enterprises and PEI is household property and entrepreneurial income, both available in NADT.

Basically, MRT define the direct tax burden on labour as non-wage labour costs (RS2000+RS3000), plus the part of taxes on household income levied on wage income. In order to calculate the latter, which is not directly available in OECDRS, MRT assume that every unit of household income, whether obtained from capital (SPUE+PEI) or dependent labour (W), is subject to the same effective rate ( $\tau_h$ ), so that ( $\tau_h * W$ ) in  $\tau_l$  is the personal income tax revenues from dependent wage income. The tax base is defined as the total labour cost of dependent labour,  $W + RS2200$ <sup>9</sup>. Indeed, the way  $\tau_l$  is calculated assumes that the whole income of the self-employed is capital income, thus included in OSPUE.

*MRT effective tax rate on capital income*

It is calculated on the basis of

$$\tau_k = ((RS1200 + RS4100 + RS4400 + \tau_h * (OSPUE + PEI)) / OS \quad (3)$$

where RS1200 is taxes on income, profits and capital gains from corporations, RS4100 is recurrent taxes on immovable property, and RS4400 is taxes on financial and capital transactions, the three of them available in OECDRS. Obviously, on the

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<sup>9</sup> Note that W in NEMA does not include social security contributions paid by the employers (RS2200), which has to be added to obtain the pre-tax cost of labour.

basis of  $\tau_h$ , the factor  $[\tau_h*(OSPUE+PEI)]$  gives the part of household income taxes coming from capital income of individuals. The tax base, OS, is the net operating surplus of the overall economy, which is available in NAMA, and measured in pre-tax terms.

### *MRT effective tax rate on consumption*

The effective tax rate on consumption is obtained from:

$$\tau_c = (RS5110+RS5121)/(CP+CG-CEGG-RS5110-RS5121) \quad (4)$$

where RS5110 is VAT (or sales taxes) and RS5121 is excise duties, both from OECDRS. The tax base is defined, as usual in pre-tax terms, as private final consumption expenditure (CP), *plus* government final consumption expenditure (CG) -both from NAMA- *minus* government final wage expenditure (CEGG) -from NADT-, *minus* tax revenues (RS5110+RS5121). CEGG is excluded from the tax base, since, as a general rule, only government non-wage consumption (CG-CEGG) is subject to consumption taxes. So defined,  $\tau_c$  gives the tax wedge between consumer prices and producer prices as a percentage of the latter<sup>10</sup>.

## **2.2 The OECD approach**

More recently, Carey and Tchilinguirian (2000), drawing on a previous work by Gordon and Tchilinguirian (1998), have introduced a number of more or less fundamental changes in the expressions (1) to (4) above. Among the most relevant ones we should mention the following. *First*, they consider that a part of the income of the self-employed is actually wage income, so that, as explained in detail in section 3, they calculate the imputed wage income for this category of labour and redefine  $\tau_l$  and  $\tau_k$  accordingly<sup>11</sup>. *Second*, these authors argue that the net operating surplus very much depends on charges for depreciation of fixed assets, which vary a great deal from one country to another, so that they also calculate  $\tau_k$  by including in the tax base the gross operating surplus, which seems to be more comparable across countries. Moreover, the gross operating surplus exhibits a less erratic evolution than the net operating surplus over the cycle. *Third*, where consumption rates are concerned, they suggest that if the aim is to relate indirect taxes to total final consumption, then government wage consumption (CEGG) should be included in the tax base. *Fourth*, they also propose to make consumption tax revenues more comprehensive and add RS5122 (profits of fiscal monopolies), RS5123 (customs and import duties), RS5126 (taxes on specific services), RS5128 (other taxes) and RS5200 (taxes on use of goods and performances) –available in OECDRS- to the numerator<sup>12</sup>. *Finally*, they relax some assumptions concerning the personal income tax rate. For instance, they look at the possibility of considering the whole tax revenues from household income as coming from labour, and analyse the implications of avoiding double taxation on dividends.

<sup>10</sup> See section 6 for the details.

<sup>11</sup> See also Gordon and Tchilinguirian (1998) and Martinez-Mongay (1998).

<sup>12</sup> Indeed, such tax items are deducted from the denominator.

Carey and Tchilinguirian have applied the original formula proposed by MRT to a sample of 29 OECD countries over the period 1980-1997<sup>13</sup>. They have also recalculated the relevant rates, namely  $\tau_l$ ,  $\tau_k$  and  $\tau_c$ , by applying the above-mentioned alternative criteria. One of the most interesting contributions of the paper is the sensitivity analyses conducted by comparing the tax burdens on labour, capital and consumption obtained under alternative criteria applied to the same input data (from OECDRS, NAMA and NADT).

The paper stresses that the tax burden has shifted towards labour in most countries during the last two decades (from the early eighties to 1997). Such a shift has taken place in a context of rising overall tax burdens, entailing a rise in the labour effective tax rate on labour, while that on capital has remained broadly stable or recorded small changes. In addition, cross-country analyses suggest that dispersion of capital tax rates has narrowed, while the distribution of the effective tax rates on labour has not changed very much.

Indeed, such overall conclusions conceal important country-specific features. These will be highlighted later in this paper, but, for our purposes, it is worth emphasising now that such broad conclusions remain regardless of the criteria applied to calculate the tax rates, either the original MRT expressions or the Carey-Tchilinguirian variants. Sensitivity analyses suggest that the main consequences of applying alternative criteria to calculate effective tax rates consist of changes in the levels of the rates, without affecting the evolution over time or across-country comparisons. We will show later that alternative effective tax indicators lead to broadly similar conclusions as long as the degree of divergence between criteria is not unacceptably large. However, the analyses carried out by Carey and Tchilinguirian (2000), and those presented at the end of this paper, also suggest that such a general conclusion may not apply to all the countries. Although they are the exception rather than the rule, in some of them, alternative criteria (viz. treatment of self-employment income, using gross or net measures of the operating surplus, including or excluding wage expending from the consumption tax base) may lead to significant differences in the tax rates.

### 2.3 The approach in *EC2000*

In cooperation with EUROSTAT and a Working Party of Member States, DG TAXUD also produces effective tax indicators -the so-called implicit tax rates-. These are published in *EC2000*<sup>14</sup>. Broadly speaking, the methodology is conceptually equivalent to that proposed by MRT. Implicit tax rates are also calculated as the ratio between aggregate measures of tax revenues from a category of taxes and the corresponding tax base. The current span of the databank starts in 1970 for a few countries, and in 1980 in most of them, to finish, as in the OECD, in 1997<sup>15</sup>. However, similarities with MRT or the OECD finish here. *First*, the *EC2000* databank only includes EU countries. *Second*, the data sources are different. *EC2000* uses the EUROSTAT New Cronos Databank (NCD hereafter) supplemented in some

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<sup>13</sup> Due to data limitations the time span greatly varies across countries.

<sup>14</sup> See European Commission (2000c).

<sup>15</sup> An update until 2001 is now available for internal use.

cases with data and information directly provided by Member States' representatives in the Working Party. *Third*, and with much more important implications, in some cases, the criteria applied in *EC2000* largely differ from those proposed by MRT. Moreover, the differences in criteria between *EC2000* and MRT are much larger than those between MRT and the OECD.

The most important differences between both methodologies concern the way personal taxes on labour income are calculated. No implicit or effective tax rate on household income is estimated and such taxes are either obtained from the so-called "wage tax" (in general, a personal labour income withholding tax available in NCD) or directly provided by some Member States. In the latter case, the Member States concerned give a breakdown of taxes paid by the individuals into tax revenues from dependent labour and tax revenues from other production factors. As a consequence, the definition of the so-called implicit tax rates on employed labour<sup>16</sup> clearly diverges from MRT's  $\tau_i$  in (1), where the term  $\tau_h * W$  is substituted by a direct measure of tax revenues from personal taxes on labour income. The numerator only includes social security contributions on employed labour (excludes those paid by the self-employed). In accordance, the denominator consists of the compensation of employees (from NCD), which include the social security contributions on employed labour.

The second relevant difference concerns the tax rate on capital. *EC2000* actually publishes the so-called implicit tax rate on "other production factors", which includes not only the self-employed and properly speaking capital incomes –as MRT does– but some relatively minor energy and environmental taxes<sup>17</sup>. Although the denominator is also the net operating surplus, as we shall show latter, there are significant differences with respect to the rates calculated *à la* MRT. The major explanation for such differences, as in the case of the tax rates of employed labour, lies in the way households' capital income taxes are calculated and, to a lesser extent, in the inclusion of some energy and environmental taxes.

Finally, where consumption taxes are concerned, the differences between *EC2000* and MRT/OECD are apparently important. They not only concern the tax items included in the numerator, which exclude some relatively minor energy and environmental taxes, but also the way the tax base is defined. Although, as in MRT, government wage spending is excluded, *EC2000* defines the tax base in after-tax terms or, in other words, tax revenues are not deducted from the final value of (taxable) consumption. However, while the inclusion or exclusion of certain tax items may have an impact on the structure of the series, measuring the tax base in after-tax or in before-tax terms only generates a scale effect, which leaves unaltered the evolution of the rates within each country, as well as comparisons across countries (see sections 6 and 9 below).

Albeit the divergences in criteria between *EC2000* and MRT/OECD are definitely significant, aggregate results for the EU as a whole published in European Commission (2000c) seem to suggest that, leaving aside unsurprising differences in terms of levels, the general evolution of implicit tax rates is quite comparable to that obtained by MRT and the OECD. This is particularly true in the case of labour and

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<sup>16</sup> Unlikely the OECD, *EC2000* follows MRT in considering the whole income of the self-employed as capital income.

<sup>17</sup> As shown in *EC2000*, such taxes may vary from one country to another.

consumption taxes. The implicit tax rates on labour exhibit a clear upwards trend, while consumption implicit tax rates have remained rather stable. However, although for the whole period 1970-1997 the implicit tax rates on “other production factors” have not changed in a significant way, when it comes to analyse the period 1980-1997, the reported trend is slightly but unambiguously decreasing. All in all, on the basis of results published in *EC2000*, one should conclude that labour has not only borne the increase in the overall tax burden, but that, albeit limited, a real tax shift away from other factors of production to labour has taken place in most EU countries.

#### **2.4. The ECFIN approach. An overview**

As far back as 1997, in a note to the Economic Policy Committee (see European Commission, 1997), DG ECFIN services also applied the MRT method. Although by that time the indicators in *EC2000* were already available, the need to carry out comparisons of tax burdens between EU and non-EU countries determined the approach of DG ECFIN on effective taxation with a view to complementing the information in *EC2000*. With some modifications -in some cases similar to those proposed later by Carey and Tchiligririan (2000)-, European Commission (1997) updated MRT indicators until 1995 and covered 22 OECD countries, including, of course, the 15 Member States and the EU-15 averages. For comparability reasons, the statistical sources used were the same as in MRT, namely OECDRS, NAMA and NADT.

Such an initial work evolved in time in order to comply with various ECFIN-specific analytical needs. Without entering now into discussing about the relative appropriateness and accuracy of the different methods reviewed above, all of them present a common drawback, which precludes the possibility of carrying out early assessments of policy reforms in the framework of multilateral surveillance processes. MRT, OECD, *EC2000* and European Commission (1997) apply more or less rigorous definitions of effective or implicit tax rates, which need detailed macroeconomic data (from NADT or NCD). As a result, there is a 2 to 3-year lag in the production of the tax rates. At the time of writing this paper (Summer 2000) the indicators in the OECD and in *EC2000* are only available until 1997. 1998 figures will be published by the end of the year. However, Member States’ policy proposals in the framework of the different multilateral surveillance processes (Stability or Convergence Programmes, National Action Plans for Employment, Progress Reports on Economic Reform, etc.) refer to plans for the current and future years. Therefore, possible impacts of planned reforms on the different tax burdens do not show up in *EC2000* or OECD tax rates, such as they are available to the general public<sup>18</sup>.

In addition, tax reforms in Member States are not usually formulated in terms of the total tax burdens on labour and capital, but in terms of their components. In particular, governments’ plans refer to reforms of social security contributions, personal income taxes, corporate taxes, and so on. Consequently, it is necessary to gauge the evolution of non-wage labour costs and the personal income taxes<sup>19</sup> in order to determine the source of the changes in the total burdens on labour and capital.

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<sup>18</sup> As mentioned before, a non-published update until 2001 exists of the rates published in *EC2000*.

<sup>19</sup> The update of *EC2000* does not give this possibility.

To fulfil such requirements ECFIN services launched a research programme<sup>20</sup> in order to adapt effective taxation methods to the input data available in AMECO. This is an ECFIN macroeconomic databank fed on the basis of standardised information provided by Member States, and also collected for some non-EU countries, notably the US and Japan. The advantage of using such a databank is that its series are updated twice a year in the framework of the Spring and Autumn Commission Forecast exercises. As a consequence, at the end of each year (Autumn) the series include projected data on two years beyond the current one. The version of AMECO used in this paper covers the period 1970-2001, and corresponds to the 2000 Spring Forecast. In addition, using AMECO data allows for disentangling the two major components of the tax burden on labour, namely non-wage labour costs and personal income taxes. Moreover, in order to carry out sensitivity analyses, the structure of AMECO also allows for calculating the tax burdens on labour, capital and consumption under different assumptions without significant additional costs.

Although the ECFIN method is explained in detail in sections 3 to 8, it is worth pointing out here that its criteria try to get a right balance between accuracy of indicators and feasibility of obtaining projections of tax rates coherent with the Commission Forecasts of Spring and Autumn. To that end, two major limitations of AMECO need to be tackled. First, the information provided by AMECO on tax revenues is relatively poor. Total tax revenues are broken down into only three items: social security contributions, taxes on income and wealth (direct taxes), and indirect taxes<sup>21</sup>. Therefore, only the tax revenue from consumption, and part of the taxes on labour, namely social security contributions, are singled out. However, taxes on income and wealth need to be decomposed further into revenues from direct taxes on labour and revenues from direct taxes on capital. As shown below, under the appropriate set of conventions, such a decomposition can be carried out by using complementary information available from the OECDRS. The second major limitation is that AMECO does not provide a proxy to household income as accurate as that used by MRT or the OECD, so that the denominator of (2) has to be proxied by a more or less exact measure of the personal income.

On this basis, and leaving aside the appropriateness of the criteria, one has to recognise that ECFIN estimates of effective tax rates represent, in conceptual terms, a second-best solution compared to the information provided in the OECD or in *EC2000*. Such weaknesses are compensated by timeliness, which is a desirable principle to be fulfilled by the indicators used in current multilateral surveillance and policy assessment processes in the Community and, namely, in the follow up of Lisbon. More important, as shown at the end of this paper, ECFIN indicators are quite comparable, in informative terms, to those produced by other institutions. This is particularly true in the case of the whole OECD databank, as well as in the case of tax rates for labour and consumption, where comparisons with *EC2000* are concerned.

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<sup>20</sup> See Martinez-Mongay and Fernandez-Bayón (1999) and Martinez-Mongay (1999).

<sup>21</sup> ESA95 system includes a finer breakdown (viz. capital taxes are singled out), but the series are very short or unavailable in some countries, and cannot be linked with the existing ESA79. See Box 3.1 on the link between ESA79 and ESA95 series.

### 3. NON-WAGE LABOUR COSTS EFFECTIVE TAX RATE

#### 3.1. Non-wage labour costs on total employment

Properly speaking, non-wage labour costs include social security contributions (SSC) and taxes on payroll and workforce (TPRWF)<sup>22</sup>, with the latter (see table BII.5 in appendix B.II) being actually non-existent or negligible in most countries, so that SSC is a good proxy to non-wage labour costs<sup>23</sup>. The non-wage labour costs effective rate (NWLC) can be calculated as the ratio of non-wage labour costs to total labour costs. This is a measure of the wedge between the nominal wage paid by the producer and the nominal wage received by the worker before paying personal income taxes.

AMECO provides directly the series on total social security contributions as ratios to each country's GDP (NWRV). On the other hand, the series for the total compensation of employees can also be obtained from AMECO in percentage of GDP (COEL)<sup>24</sup>.

#### **Box 3.1. Statistical problems. From ESA79 to ESA95 and the German case**

The changeover to ESA95 has affected AMECO series on public finances and, indeed, the components of the total tax burden. Where social security contributions are concerned, the ESA95 system considers three different items ("SSC received", "Actual SSC" and "Imputed SSC"), so that a choice has to be taken. Analogously, the ESA95 system includes information on capital taxes, which are not available in ESA79. The problem with using ESA95 data is that, although all the series currently stop in 2001, the starting year varies from one country to another and there is no data before the nineties for most of them. In addition, the ESA79 series, which start in 1970 for all the countries, stop in 1995 in most cases. Consequently, in order to obtain a set of series for all the countries over the period 1970-2001 it has been necessary to link the ESA95 series with their counterparts in the ESA79 system. Since the main purpose of the AMECO databank on effective taxation is to carry out early assessments of tax reforms (from 1999 onwards), we have kept the ESA95 original series for the available years and reconstructed them backwards on the basis of the observed growth rates in the corresponding ESA79 series. In the case of social security contributions, the choice of the ESA95 series, "Social security contributions received; general government" (AMECO code UTSG) has been determined by its unique counterpart in ESA79, "Social security contributions received; general government" (AMECO code UTSGF). The same applies to other series used in the calculations displayed in this paper (see appendix AI for a detailed description of the series used).

In the case of Germany the need of linking ESA79 and ESA95 figures overlaps with the break imposed on the series by German Unification. Series for the unified Germany are only available for 1991 onwards, while those for the former West Germany only run until 1997/98. Unlikely in the case of the changeover to ESA95, since the former and the unified Germany may be two very different economic entities, reconstructing backwards the series for Germany on the basis of the growth rates for West Germany may be controversial. Therefore, we have opted by linking both types of series directly. As a result, a structural break usually appears in 1991 in the series in levels, which, indeed, does not affect within and across-country assessments in the 90's and 2000's.

<sup>22</sup> Appendix AI gives detailed account of the statistical sources of the input series. Appendix AII provides synthetic definitions and formula of transformed variables and tax rates developed in this paper.

<sup>23</sup> Moreover, as shown in sections 9 and 10, disregarding or not TPRWF does not make a real difference in terms of within-country evolutions or across-country comparisons. See also Box 3.2 in section 3.2.

<sup>24</sup> Note that COEL includes social security contributions paid by both the employers and the employees

The problem with NWRV and COEL is that they refer to two different categories of labour. NWRV includes the social security contributions paid by the self-employed, while COEL only includes the total cost of the employees (thus only including SSC on dependent labour). This points to the possibility of calculating two different indicators of NWLC. First, the fact that the self-employed pay social security contributions suggests that a part of their income is treated as labour income, while, at the same time, they are meant to receive some income as owners of capital. Although such an income cannot be directly observed, it is possible to obtain a proxy for the labour income of the self-employed which is consistent with theoretical models of firm behaviour. The opportunity cost of being self-employed is the wage that this category of workers would have earned had they been working as employees. Such an opportunity cost can be proxied by the average wage of employees. This hypothesis is of general use for estimating the labour share on the basis of the compensation of employees in macroeconomic and growth models, and has been adopted to calculate the effective tax rate of labour by the OECD<sup>25</sup>. If OCCP is the occupied population or, in other words, total employment (National Accounts) and EMPL stands for employees (wage and salary earners), both measured in persons and available in AMECO, the labour share including the opportunity cost of the self-employed – LETB, which is coincidental with the labour effective tax base- can be calculated as

$$LETB = COEL * OCCP / EMPL \quad (5)$$

Then, the effective average non-wage labour costs for total employment can be obtained as:

$$NWLC = NWRV / LETB \quad (6)$$

In short, the effective rate of non-wage labour costs (NWLC) is the ratio of total social security contributions (NWRV) to total labour costs (LETB). The rate includes the imputed wage of the self employed, as well as the social security contributions paid by this category of labour. At the macroeconomic level, such an imputed wage equals the average gross wage earned by employees (wage and salary earners). Therefore, the total cost of labour can be calculated as the total compensation of employees multiplied by the ratio of occupied population to wage and salary earners<sup>26</sup>.

Table 1 reports the evolution of NWLC (in percent) between 1970 and 2001. The long-run trend has been unambiguously positive over the whole period. The trend seems to have reversed after the early nineties crisis. Such a recent evolution is very much in line with successive recommendations of the Commission's *Broad Economic Policy Guidelines* (see European Commission, 2000b) and the *Lisbon Conclusions*. The observed fall seems to be related to efforts to reduce taxation on labour through cuts in SSC.

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<sup>25</sup> See Gordon and Tchilinguirian (1998) and Carey and Tchilinguirian (2000). Martinez-Mongay (1998) also suggested this solution.

<sup>26</sup> Of course, the total operating surplus of the economy should be then reduced by an amount equal to the average gross wage times the number of the self-employed.



Despite this, however, the effective NWLC rate remains still much higher in the Euro area (28%) and the EU as a whole (25%) than in the US (12%) or Japan (17%). The exceptions to this rule are the UK, Ireland and Denmark. At 12%, non-wage labour costs in the two first countries are comparable to the US', while, in Denmark, the figure is below 6%. In this latter case, as will be shown below, there is a clear compensation through very high personal income taxes on labour income. According to *PFR2000*, the evolution of NWLC is driven by insurance principles, thus closely linked to the evolution of welfare spending. In the case of Denmark, however, such insurance principle determines the personal income tax rather than non-wage labour costs.

NWLC are declining and/or practically stagnating in most Member States. According to the 2000 Spring forecast of the Commission, NWLC will decrease by more than half a point of labour costs in both the euro area and the EU-15 until 2001. Within the euro area, noticeable falls will take place in Belgium, Germany, Ireland, and the Netherlands, while an increase of more than 0.5% is projected in Portugal. However, non-wage labour costs are expected to increase outside the euro area except in the UK. Particularly in Sweden, the projected change amounts to 3 percentage points of the wage bill.

<b>Table 1. Non-wage labour costs; total employment (NWLC)</b>											
	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>70-79</b>	<b>80-89</b>	<b>90-98</b>	<b>99-01</b>
B	18.3	19.8	25.4	26.6	26.5	25.9	25.5	1.6	6.1	1.2	-1.0
D	19.4	25.1	27.4	32.2	31.8	31.5	31.1	5.8	2.5	4.8	-0.7
E	10.5	17.2	19.9	21.7	21.9	21.9	21.9	6.3	2.6	1.8	0.0
F	21.9	28.2	33.8	31.4	32.1	31.8	31.9	5.5	5.6	-2.4	-0.2
IRL	4.8	9.0	11.8	11.3	12.2	11.3	11.2	3.7	2.7	-0.5	-1.0
I	17.6	19.6	22.8	23.3	23.0	23.0	23.1	1.5	3.0	0.5	0.1
L	16.5	20.0	21.2	21.4	20.9	21.0	20.9	3.1	1.9	0.1	0.0
NL	18.3	23.3	25.0	27.4	28.4	28.1	25.0	4.5	4.2	2.5	-3.4
A	17.6	21.5	22.7	26.5	26.2	26.2	26.2	3.2	1.5	3.7	0.0
P	6.6	9.5	14.0	17.7	19.9	20.3	20.5	2.5	4.3	3.6	0.6
FIN	9.0	17.0	20.3	23.9	23.6	23.3	23.4	7.7	1.6	3.6	-0.2
<b>EUR-11</b>	<b>18.5</b>	<b>23.4</b>	<b>26.3</b>	<b>28.1</b>	<b>28.1</b>	<b>27.9</b>	<b>27.5</b>	<b>4.6</b>	<b>3.1</b>	<b>1.8</b>	<b>-0.6</b>
DK	3.4	2.5	3.8	4.5	5.7	6.1	6.1	-1.2	1.1	0.7	0.4
GR	11.4	14.7	17.5	22.0	22.9	23.2	23.5	2.4	2.1	4.5	0.6
S	14.5	23.8	25.7	26.9	25.4	28.0	28.4	8.4	1.6	1.2	3.0
UK	9.6	11.4	11.3	12.3	12.0	11.9	11.9	1.6	0.5	1.0	-0.1
<b>EU-15</b>	<b>16.4</b>	<b>21.0</b>	<b>23.5</b>	<b>24.9</b>	<b>24.8</b>	<b>24.4</b>	<b>24.2</b>	<b>4.4</b>	<b>2.6</b>	<b>1.4</b>	<b>-0.6</b>
US	6.9	9.3	11.2	11.5	11.6	11.4	11.3	2.5	2.0	0.2	-0.2
JP	6.6	9.9	13.6	16.0	16.5	17.1	17.4	3.1	2.5	2.4	0.9

Source: AMECO (DG ECFIN) and own calculations

### 3. 2. Non-wage labour costs on employed labour

As explained in section 2, both MRT and *EC2000* assume that all income earned by the self-employed is capital income, so that employees are the only production factor obtaining labour income. Although less straightforwardly, the non-wage labour costs effective tax rate on employed labour can be calculated by combining the OECDRS databank with AMECO.

In the OECD, item RS2000 -total social security contributions- is decomposed into SSC paid by the employees (RS2100 -SSCEM), SSC paid by the employers (RS2200 -SSCER), SSC paid by the self-employed (RS2300 -SSCSE), and SSC not allocable between SSCER, SSCEM and SSCSE (RS2400 -SSCOT). Furthermore, item RS3000 includes taxes on payroll and workforce (TPRWF). Since non-wage labour costs on employed labour consist of SSCER, SSCEM and TPRWF, by calculating<sup>27</sup>

$$SELR = (SSCER+SSCEM+TPRWF)/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF) \quad (7)$$

it is possible to estimate the part of NWRV, as published in AMECO, attributable to employed labour<sup>28</sup> (see box 3.1)

$$ELRV = NWRV*SELR \quad (8)$$

#### Box 3.1. The treatment of taxes on payroll and workforce

Expression (8) is just a convention, which does not take into account that NWRV in AMECO only includes the equivalent to RS2000 in OECDRS. Two other alternatives are equally possible. The first one is to “inflate” NWRV in AMECO using OECDRS data to estimate SSC plus TPWRF. In other words, to recalculate NWRV in AMECO by multiplying it by the factor [(RS2000+RS3000)/RS2000]. The second alternative is to ignore RS3000 altogether. We have not opted for the first alternative because one of the goals of the ECFIN databank on effective taxation is to rely as much as possible on AMECO data. It is clear that expression (6) in section 3.1 only needs AMECO data, while, had the first alternative been taken, we would have needed to estimate the non-wage labour costs effective rate for total employment also on the basis of OECDRS. Where the second alternative is concerned, ignoring RS3000 does not make much of a difference in most countries. As shown in table BII.5 of appendix B.II, the share of RS3000 in (RS2000+RS3000) is zero in most Member States, as well as in the US and Japan. This is particularly true since the mid-eighties, where it is only significant in Denmark, Ireland, Austria and Sweden. Moreover in the former country, it is negligible in absolute terms, since (see table 1) total non-wage labour costs in Denmark are a very small fraction of total labour costs. In addition, as shown below in section 9 and, to a lesser extent, in section 10, alternative indicators or labour tax rates (for total or employed labour) are statistically equivalent even for those countries (Ireland, Austria and Sweden) where RS3000 is sizeable. In consequence, from our point of view, the way such tax item is treated to obtain the non-wage labour costs effective rate is not a relevant issue, while being able to calculate NWLC in (6) just on the basis of AMECO data is a clear advantage.

Then, the effective non-wage labour cost rate on employed labour is:

<sup>27</sup> The series SSCER, SSCEM, SSCSE, SSCOT, TPRWF as a percentage of SSCER+SSCEM+SSCSE+SSCOT+TPRWF -see (7)- can be found in appendix B.II.

<sup>28</sup> Table BII.6 in appendix B.II presents the series SELR from 1970 to 1997/98.

$$NWEL = ELRV/COEL \quad (9)^{29}$$

Since the latest year available in the OECDRS is currently 1997 or 1998, depending on countries, NWEL is extrapolated until 2001 by assuming that the latest observed value of SELR holds between 1997/98 and 2001. The series SELR evolve in a very smooth way<sup>30</sup>, which suggests that this hypothesis may be acceptable as a general rule, unless drastic reforms of social security contributions have induced significant structural changes in the composition of the denominator in (7). In such circumstances, NWEL will not be able to reflect such changes after 1997/98. Yet, as shown in section 9, NWEL and NWLC are statistically equivalent, while the 1997/98-2001 figures of the latter series are not based on extrapolating hypotheses.

In sum, if the whole income of the self-employed is treated as capital income, the non-wage labour costs of employed labour (NWEL) can be defined as the ratio of SSC paid by the employees *plus* SSC paid by the employers *plus* taxes on payroll and workforce to the total compensation of employees, thus excluding the gross wage income of the self-employed. As shown in table BI.2 of appendix B.I, the exclusion of the imputed wage of the self-employed from the total income of labour does not change very much the conclusions about the past evolution of non-wage labour costs. Neither does it change the projection until 2001 in a significant way. The only remarkable difference is a generalised increase of NWEL compared with NWLC. It is obviously due to the fact that the imputed gross wages of the self-employed are much less taxed than the average wage of the employees. As a consequence, compared with NWLC, the rate of non-wage labour costs in 1999 increases by at around 2 percentage points of the wage bill in both the euro zone (from 28% to 30%) and the EU-15 (from 25% to 27%). However, in the case of the US, the differences are almost negligible. Indeed, this is due to a low share of the self-employed in the occupied population. As a matter of fact, where the Member States are concerned, the largest discrepancies between both rates are found in Greece (from 23% to 41%) and Portugal (from 20% to 26%), where the primary sector and, thus, self-employment is relatively important.

### 3.3. Non-wage labour costs paid by the employers

Leaving aside TPRWF (RS3000), non-wage labour costs for employed labour have two components, namely SSC paid by the employers (SSCER) and that paid by the employees (SSCEM). There is some conventional wisdom that such components do not have an equal potential impact on employment performance. In particular, it is argued that SSCER may have a direct negative impact on the demand for labour (Liebfritz, Thornton and Bibbee, 1997, Hamermesh, 1993) and defendants of tax cuts to boost employment as, for instance, Dreze and Sneessens (1996) also put strong emphasis on the reduction of SSCER. The part of the NWEL paid directly by the employers can be computed in the following manner. First, on the basis of the OECDRS, we compute the share of SSCER on total non-wage labour costs

$$SERR = SSCER / (SSCER + SSCEM + SSCSE + SSCOT + TPRWF) \quad (10)$$

<sup>29</sup> As shown below, COEL is conceptually equivalent to the tax base used in European Commission (2000c) to calculate the so-called implicit tax rate of labour.

<sup>30</sup> The most outstanding exceptions to this rule in the nineties are Belgium (1993), Greece (1991-1993), Italy (1992, 1993, 1996) and, to a lesser extent, Portugal (1993-1996).

then, we estimate the part of NWRV (in AMECO) paid by the employers<sup>31</sup>

$$ERRV = NWRV * SERR \quad (11)$$

Finally, we define

$$NWER = ERV/COEL \quad (12)$$

Again, the series can be calculated until 1997/98 and then extrapolated to 1998/99-2001 by assuming that the share SERR observed in 1997/98 holds from 1998/99 to 2001.

Table 2 shows the evolution and differences across countries of the ratio of SSC paid the employers to the total wage bill of employed labour, as defined in (12). Overall, SSC paid the employers account for at around 20% of gross wages, and long-run changes of NWER amount for half the changes in NWLC during the seventies and the eighties. In the nineties, however, NWER has increased by much less than NWLC or, even, has followed a negative path. This suggests that a number of countries have proceed to reduce non-wage labour costs mainly through cutting the contributions of the employers.

<b>Table 2. Non-wage labour costs paid by the employers (NWER)</b>											
	1970	1980	1990	1998	1999*	2000*	2001*	70-79	80-89	90-98	99-01*
B	14.5	15.1	19.8	19.9	19.8	19.3	19.0	0.7	4.3	0.2	-0.8
D	12.1	15.2	15.6	18.0	17.8	17.6	17.4	3.0	0.5	2.5	-0.4
E	12.1	17.6	17.8	18.0	18.0	17.8	17.7	5.4	0.2	0.2	-0.3
F	19.6	21.3	23.1	22.5	22.9	22.5	22.5	1.5	1.9	-0.6	-0.4
IRL	3.7	7.5	8.5	7.7	8.3	7.7	7.7	3.5	0.8	-0.8	-0.7
I	19.3	19.4	22.3	22.9	22.4	22.4	22.4	-3.1	2.6	0.6	0.0
L	10.7	12.5	11.4	10.1	9.9	9.9	9.8	1.5	-0.6	-1.3	-0.1
NL	10.6	13.0	5.9	5.8	6.0	5.9	5.2	1.8	-0.5	-0.1	-0.8
A	9.0	11.4	12.1	13.4	13.2	13.2	13.2	2.1	0.9	1.3	0.0
P	5.9	7.6	11.9	13.6	15.1	15.4	15.5	1.8	4.1	1.7	0.4
FIN	7.1	19.3	22.1	21.1	20.8	20.6	20.7	11.3	1.1	-0.9	-0.1
<b>EUR-11</b>	<b>15.0</b>	<b>17.3</b>	<b>18.5</b>	<b>18.9</b>	<b>18.8</b>	<b>18.6</b>	<b>18.5</b>	<b>1.6</b>	<b>1.5</b>	<b>0.4</b>	<b>-0.4</b>
DK	1.0	1.1	0.8	0.8	1.1	1.1	1.1	-0.1	-0.5	0.1	0.1
GR	10.6	12.3	16.2	17.8	18.2	18.1	18.1	1.4	3.2	1.6	-0.2
S	11.6	22.2	23.5	19.1	18.1	19.9	20.2	9.8	1.0	-4.4	2.1
UK	4.1	6.1	7.7	7.4	7.2	7.1	7.1	1.9	1.6	-0.3	-0.1
<b>EU-15</b>	<b>12.8</b>	<b>15.4</b>	<b>16.7</b>	<b>16.6</b>	<b>16.5</b>	<b>16.2</b>	<b>16.1</b>	<b>2.1</b>	<b>1.5</b>	<b>-0.1</b>	<b>-0.4</b>
US	3.9	5.5	6.3	6.4	6.4	6.3	6.3	1.7	0.9	0.1	-0.1
JP	5.1	6.9	8.8	9.7	10.0	10.3	10.4	1.6	1.3	0.9	0.4

Source: AMECO (DG ECFIN) and OECD Revenue Statistics

\* Estimates on the basis of 1997/98 data

<sup>31</sup> Table BII.1 in appendix B.II presents the series SERR in %.

Some differences across Member States are worth highlighting. In the Netherlands, Greece, Denmark, and, to a lesser extent, Germany, Luxembourg, Austria and Portugal, SSC paid by the employers represent less than a half the non-wage labour costs on employed labour. At the opposite extreme, in Italy and Finland, the bulk of SSC on employed labour is financed by the employers. In any case, as already noted for the non-wage labour costs on total employment, in terms of gross wages, the part of SSC directly paid by the employers is much higher in the EU than in the US or Japan. In the case of the euro zone, the figure is three times that of the US, and the gap is even larger if we compare the US with some Member States, such as France, Italy or Finland. However, the rates in the Netherlands and the UK are similar to those observed at the other side of the Atlantic. Indeed, in Denmark, SSC paid by the employer account for a negligible amount of gross wages. Finally, leaving aside Sweden and, to a much lesser extent, Portugal, the part of SSC paid by the employers is projected to decrease or remain unchanged in the EU Member States between 1999 and 2001.

#### **4. THE PERSONAL INCOME EFFECTIVE TAX RATE**

Once non-wage labour costs have been deducted from gross wages, workers pay personal income taxes on their remaining labour income. Analogously, once capital incomes have been adjusted for corporate income taxes and those on property and wealth, the remaining capital income received by households is also taxed through the same personal income tax. As explained in section 2, the effective taxation on labour must include non-wage labour costs and personal income taxes paid by labour income. *Mutatis mutandis*, the effective taxation on capital should include not only the corporate income tax and taxes on property and wealth but also that part of the personal income tax paid by capital incomes. Therefore, to obtain such effective tax rates on labour and capital income it is necessary to split personal income taxes between the two production factors.

##### **4.1. The ECFIN approach**

Such a split is not directly available either from AMECO or from the OECDRS. AMECO only provides the aggregate series on direct taxes on income and wealth (DTRV). Such series actually include four categories of taxes: taxes on personal income from labour, taxes on personal income from capital, taxes on corporate income and taxes on property and wealth. Property taxes could reasonably be imputed to capital income, since they are taxes on the capital stock of the economy regardless of whether they are paid by individuals or by firms. Consequently, only the first component includes taxes on labour income.

Where the OECDRS databank is concerned, it provides a more detailed, but still insufficient, breakdown of direct taxes. OECDRS distinguishes between “Taxes on income, profits and capital gains of individuals” (item RS1100 –TRII hereafter), “Corporate taxes on income, profits and capital gains” (item RS1200 -TRCI), and “Revenues from any kind of property taxes” (RS4000 -PROP). TRCI and PROP are exclusively capital taxes, while TRII includes direct taxes on both labour and capital.

Based on this breakdown of direct taxes, it is possible to decompose DTRV from AMECO into the same three categories of direct taxes. First, we calculate the following ratios from the OECDRS:

$$TRIIR = TRII/(TRII+TRCI+PROP) \quad (13)$$

$$TRCIR = TRCI/(TRII+TRCI+PROP) \quad (14)$$

$$PROPR = PROP/(TRII+TRCI+PROP) \quad (15)$$

Then, as we have done with SSC, we decompose DTRV from AMECO in the following way:

$$PIRV = DTRV*TRIIR \quad (16)$$

$$CORV = DTRV*TRCIR \quad (17)$$

$$PWRV = DTRV*PROPR \quad (18)$$

Again, since the series in OECDRS only provide coverage up to 1997/98, the values of the series on PIRV, CIRV and PRIRV for 1998/99 to 2001 have been obtained by assuming that the values of TRIIR, TRCIR and PROPR observed in 1997/98 hold in the 1998/99-2001 period<sup>32</sup>.

Once PIRV, CORV and PWRV have been singled out, the problem is to split PIRV into household tax revenues from labour and capital income. In order to do that, we follow MRT and assume that any unit of a household income pays the same average tax rate regardless of the source of such income, whether labour or capital. Strictly speaking, we apply here a modified version of the MRT approach. As in Carey and Tchilinguirian (2000), we assume that only the net wage (take-home pay) is subject to the personal income tax. However, we apply a rather broad definition of personal income from capital. Instead of using, OSPUE (*less* the imputed wage income of the self-employed) *plus* PEI, we define the household income from capital as the net operating surplus of the economy (NOS), which is available in AMECO (code UOND), *minus* the imputed labour income of the self-employed *minus* other direct taxes on capital, namely the corporate income tax and taxes on property and wealth. The personal income tax base is

$$PITB = LETB - NWRV + NOS - (LETB - COEL) - CORV - PWRV \quad (19)$$

where LETB is defined in (5) and CIRV and PIRV have been calculated in (17) and (18), respectively. A more condensed expression of (19) is:

$$PITB = COEL + NOS - NWRV - CORV - PWRV \quad (20)$$

Then, the effective tax rate on personal income is:

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<sup>32</sup> Tables BII.9 to BII.13 in appendix B.II show the series per country corresponding to expressions (13) to (18) over the period 1970-1997/98.

$$PITR = PIRV/PITB$$

(21)

Summarising, the total personal income effective tax rate is calculated as the ratio of tax revenues from income taxes paid by individuals to the total income received by them, a part of which is revenues from capital. Such personal income is the sum of total labour costs, including the imputed wages of the self-employed and excluding social security contributions, and the net operating surplus of the economy, adjusted for the imputed wages of the self-employed and excluding taxes on corporate income and on property and wealth. As shown in sections 5 and 8, tax revenues from both sources, labour and capital, can be straightforwardly singled out on the basis of PITR.

**Table 3. Personal income tax rates (PITR)**

	1970	1980	1990	1998	1999*	2000*	2001*	70-79	80-89	90-98	99-01*
B	12.2	22.7	22.1	25.2	25.0	24.8	24.2	11.2	-1.6	3.0	-0.8
D	12.4	17.3	15.1	17.0	17.8	17.7	15.9	4.1	0.0	1.9	-1.9
E	1.8	6.0	10.1	10.1	10.2	10.3	10.4	3.2	4.4	0.1	0.2
F	6.0	8.8	8.8	14.4	15.4	14.6	14.5	2.0	0.0	5.6	-0.9
IRL	5.2	12.7	14.6	13.4	13.7	13.0	12.8	4.7	2.2	-1.2	-0.8
I	3.7	10.1	16.9	15.6	16.4	15.7	15.7	5.1	6.5	-1.3	-0.8
L	7.2	15.7	15.3	13.1	12.8	12.5	12.0	7.9	-1.7	-2.2	-0.7
NL	14.2	18.9	18.1	11.6	12.0	11.3	10.6	4.6	-2.8	-6.4	-1.3
A	10.8	14.8	15.6	19.8	19.5	18.3	17.8	3.5	-0.2	4.2	-1.8
P	5.0	6.4	7.0	8.7	9.8	10.0	10.3	1.4	1.7	1.7	0.5
FIN	15.7	20.5	27.3	26.1	25.8	25.8	25.3	4.5	4.9	-1.2	-0.5
<b>EUR-11</b>	<b>8.4</b>	<b>13.1</b>	<b>14.2</b>	<b>15.6</b>	<b>16.3</b>	<b>15.8</b>	<b>15.1</b>	<b>4.1</b>	<b>1.4</b>	<b>1.4</b>	<b>-1.2</b>
DK	27.5	33.1	38.5	40.0	41.0	39.8	39.3	3.9	7.7	1.5	-1.6
GR	2.0	4.1	4.8	8.6	8.3	7.8	7.6	1.3	0.0	3.8	-0.7
S	26.3	32.3	36.6	34.2	34.7	32.3	31.0	6.8	6.1	-2.4	-3.7
UK	15.6	15.3	16.2	15.0	15.0	14.8	14.5	-0.8	-1.1	-1.2	-0.5
<b>EU-15</b>	<b>10.7</b>	<b>14.5</b>	<b>15.6</b>	<b>16.4</b>	<b>17.0</b>	<b>16.5</b>	<b>15.9</b>	<b>3.2</b>	<b>1.3</b>	<b>0.8</b>	<b>-1.1</b>
US	10.6	12.5	11.9	13.7	14.1	14.0	14.1	1.7	-0.4	1.9	0.0
JP	4.4	7.1	10.2	5.8	4.6	4.6	4.7	2.0	2.0	-4.4	0.1

Source: AMECO (DG ECFIN) and OECD Revenue Statistics

\* Estimates on the basis of 1997/98 data

The effective rate of personal income taxes (PITR) in the euro zone was about 16% in 1999 (17% in the EU-15 –see table 3). This is quite comparable with the figure in the US (14%). Overall, the way the personal income is taxed largely varies across Member States. While in some Mediterranean countries, such as Spain, Portugal or Greece, the effective rate is below or close to 10%, in the Nordic countries (Denmark, Finland and Sweden) as well as in Belgium, governments take more than 25% of the personal income tax base in the form of taxes on households. High taxation in Denmark (more than 40%) is, at least, partially explained by very low social security contributions, so that the welfare state there is mainly financed through general taxes.

Over the whole period 1970-1999, the personal income effective tax rate increased by almost 100% in the euro zone. However, the bulk of the change took place during the seventies, while in the eighties and the nineties such a positive trend slowed down. The reforms applied or planned in most Member States in the short to medium term will reverse the path in the coming years. Portugal is the only country where, on the basis of Commission's 2000 Spring Forecast, an increase of the tax rates on personal income (half a point) is predicted. All in all, comparing the changes in table 3 for the period 1999-2001 with the corresponding figures in table 1, it seems that Member States prefer to lower taxation on personal income as a strategy to reduce taxation on labour, rather than to lower social security contributions (see *PFR2000*). As a result, as shown below, the effective tax rates of labour and capital are expected to decrease in the early 2000's.

#### **4.2. ECFIN versus MRT, OECD and EC2000 approaches**

Expression (21) compared with (2) reveals that there are two major differences between the ECFIN definition of the personal income tax rate and that of MRT in its Carey-Tchilinguirian version. Expression (21) is based on a rather rough approximation to the personal, taxable income. We include enterprises' (both corporate and incorporate, but especially the former<sup>33</sup>) net savings in the personal income tax base, thus wrongly assuming that profits are fully distributed<sup>34</sup>. This means that the tax base is overestimated if such net savings are positive and underestimated when they are negative. In addition, unlikely MRT and the OECD, we use a rather broad definition of property taxes, which covers the whole item RS4000 in OECDRS, while MRT only include RS4100 and RS4400. The advantage in approximating the personal income in this way is that we can use variables, such as the compensation of employees and the net operating surplus, which are updated and projected twice a year in the framework of Commission's Spring and Autumn Forecast, while OSPUE and PEI in (2) are available with a 2 or 3-year lag. Moreover, as a general rule, there is no a big quantitative difference between using RS4000 and RS4100+RS4400, while, in some cases, aggregate items in the OECDRS, such as RS4000, are more updated than their components.

Overall, one could argue that the criteria proposed here may be as good or as bad as any other applied in the relevant literature on effective taxation. The criteria applied by Mendoza, Razin and Tesar (1994) or Carey and Tchilinguirian (2000), as well as those of *EC2000* in European Commission (2000c), also lead to more or less rough approximations to the "true" personal income tax revenues from labour income.

Where the MRT method is concerned, one has to conclude that, in the end, the range of alternatives to define the personal income tax base is rather wide. For instance, Carey and Tchilinguirian (2000) have proposed a number of modifications of the

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<sup>33</sup> Once the imputed wage of the self-employed is deducted from OSPUE, profits (and savings) of unincorporated enterprises are a rather small fraction of GDP.

<sup>34</sup> AMECO includes series on net savings for both corporate enterprises and for households (including net savings from incorporated enterprises), which could be used to obtain a better proxy of the personal income tax base. However, the series of net saving of corporations are not available in some countries and they are very short in most of them, while the series of net savings from incorporated enterprises cannot be singled out from total household savings.



MRT method. These include correcting the treatment of social security and private employers' contributions to pensions funds, avoiding double taxation of dividends, considering the preferential tax treatment for pension funds and life insurance earnings, or assuming that households do not pay taxes on capital income. In most cases, such modifications require using costly information, which is not timely available and/or it is totally absent in National Accounts. In addition, when comparing different alternatives, the conclusion seems to be that such modifications induce more or less large changes in levels and affect some countries more than others. However, their impacts in terms of within-country evolutions and across-country comparisons are fairly small in most cases or even negligible in some of them<sup>35</sup>.

The differences between ECFIN and *EC2000* methods are much more important. In *EC2000* tax revenues from personal income taxes on labour income are not estimated but directly provided by some Member States (viz. Belgium, Denmark, France, Ireland, Italy, Finland, and Sweden) or defined as the wage tax (withholding taxes on wages, available in NCD). As a result, the TAXUD method is not comparable at all with those of MRT, the OECD or ECFIN because, among other things, the former uses non-publicly available information<sup>36</sup>. Volkerink and de Haan (1999) have compared the MRT series for the effective tax rate on labour (see section 5 below) with the implicit tax rate on employed labour published in *EC2000*. The only, and unsurprising, conclusion is that both methods provide series largely diverging in terms of levels and trends. However, it is not possible to find clear arguments in favour of one or another method.

Therefore it seems that, from an empirical point of view, different methods either lead to fairly similar tax indicators or to totally different ones, but there are not clear *ex ante* arguments to take a choice. As shown in section 10, MRT, the OECD and ECFIN approaches lead to sets of indicators with similar statistical properties. However, in some cases the divergences with *EC2000* are really important. In the end, the different ways tax revenues from personal taxes are obtained are based on a number of conventions, rather than on more or less indisputable theoretical or empirical arguments. Given this, unless the OECD and/or *EC2000* databanks on effective and implicit taxation are able to fulfil the requirements of availability in a timely fashion and of comparability across Member States, we think that the approximation proposed here may be, at least, a transitory reasonable solution<sup>37</sup>.

## 5. THE EFFECTIVE TAX RATE ON LABOUR

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<sup>35</sup> Carey and Tchilinguirian, 2000, §30; see also §41.

<sup>36</sup> It is also worth noting that the *EC2000* method is not internally comparable either, since it uses two different statistical sources for the tax revenues from personal income from labour (Member States' ad-hoc information and New Cronos). In addition it is unclear whether the information provided by some Member States on taxes on personal income from labour follow methods comparable across countries.

<sup>37</sup> Moreover, this approximation will be very much improved when series of "Net saving, corporate enterprises", under AMECO code USNE, are completed and available for all the countries.

The effective tax rate on labour income is the ratio of the sum of non-wage labour costs *plus* the personal income tax revenues attributable to labour income to the pre-tax labour income. The latter is, obviously, total gross wages, including gross wages imputed to the self-employed. The second component of the tax revenues can be estimated by multiplying PITR in (21) by the net wage, once non-wage labour costs have been discounted. Then the effective tax rate on labour income is

$$LETR = (NWRV + PITR*(LETB - NWRV))/LETB \quad (22)$$

If one is more concerned about the effective tax rate on the income of employed labour, (22) a slight modification gives:

$$LITR = (ELRV + PITR*(COEL - ELRV))/COEL \quad (23)$$

Where ELRV is defined in (8). It is worth noting that, leaving aside the way PITR is computed, (23) is conceptually equivalent to the implicit tax rate on employed labour as published in *EC2000*.

In short, the effective tax rate on labour income (LETR) can be computed as the ratio of NWLC (SSC *plus* taxes on payroll and workforce) *plus* personal taxes on labour income to gross wages. Analogously, the effective tax rate on employed labour will be accordingly calculated as the ratio of NWEL (SSC paid by the employers and the employees *plus* taxes on payroll and workforce) *plus* personal taxes on the labour income of the wage and salary earners to COEL (compensation of employees).

The effective tax burden on labour in the euro zone was close to 40% in 1999 (table 4). This is 3 percentage points higher than in the EU-15 and 16 and 20 points higher than in the US and Japan, respectively. By comparing, table 4 with tables 1 and 3, it becomes clear that such large differences between the EU and its two major trade partners is explained by the differentials in non-wage labour costs, rather than by the existing differences in taxes on household income. Where differences across Member States are concerned, the tax burden on labour is above 40% in Belgium, Germany, France, Austria, Finland, Denmark and Sweden. In the latter country, the effective tax burden on labour income (total employment) represents more than 50% of the gross wage bill. At the opposite extreme, the tax burden on labour is relatively low and comparable with that of the US in Ireland, the UK and, to a lesser extent in Portugal.

The effective tax rate of labour has not ceased to increase during the last thirty years both inside and outside the EU. The only clear exception is the UK, where the rate has remained fairly stable since 1970. As with non-wage labour costs and personal taxes, the largest change took place during the seventies, while the trend slowed down in the eighties and even more in the nineties. Leaving aside Portugal, on the basis of *Commission's 2000 Spring Forecast*, such trends are being reversed in most Member States. The effective tax rate of labour is projected to decrease by 1.3 percentage points of the wage bill between 1999 and 2001. Relatively large falls (by more than 1%) are expected in Belgium, Germany, Ireland, the Netherlands, Austria and Denmark.

**Table 4. Effective tax rates on labour (LETR)**

	1970	1980	1990	1998	1999*	2000*	2001*	70-79	80-89	90-98	99-01*
B	28.3	38.0	41.9	45.1	44.9	44.2	43.6	10.4	3.6	3.2	-1.3
D	29.4	38.1	38.3	43.7	44.0	43.6	42.0	8.1	2.0	5.4	-1.9
E	12.1	22.2	27.9	29.6	29.9	29.9	30.0	8.8	6.0	1.7	0.1
F	26.6	34.6	39.7	41.3	42.6	41.8	41.8	6.6	5.1	1.6	-0.8
IRL	9.8	20.5	24.6	23.2	24.2	22.9	22.6	7.8	4.3	-1.4	-1.5
I	20.7	27.7	35.9	35.3	35.6	35.1	35.1	5.6	7.7	-0.6	-0.5
L	22.5	32.6	33.3	31.7	31.0	30.8	30.4	9.2	0.3	-1.6	-0.6
NL	29.9	37.8	38.5	35.9	37.0	36.3	32.9	7.4	1.4	-2.7	-4.0
A	26.5	33.1	34.8	41.0	40.6	39.8	39.3	5.7	1.1	6.2	-1.3
P	11.3	15.3	20.1	24.8	27.8	28.3	28.7	3.7	5.4	4.8	1.0
FIN	23.3	34.0	42.0	43.8	43.3	43.1	42.8	10.2	5.3	1.7	-0.5
<b>EUR-11</b>	<b>25.3</b>	<b>33.4</b>	<b>36.9</b>	<b>39.3</b>	<b>39.8</b>	<b>39.2</b>	<b>38.5</b>	<b>7.4</b>	<b>3.9</b>	<b>2.4</b>	<b>-1.3</b>
DK	30.0	34.8	40.9	42.7	44.3	43.4	43.0	2.9	8.1	1.9	-1.3
GR	13.1	18.2	21.4	28.7	29.3	29.2	29.3	3.5	2.1	7.3	0.0
S	37.0	48.4	52.9	51.9	51.3	51.2	50.6	11.4	5.7	-1.0	-0.7
UK	23.7	25.0	25.6	25.4	25.3	24.9	24.7	0.6	-0.5	-0.2	-0.6
<b>EU-15</b>	<b>25.5</b>	<b>32.5</b>	<b>35.7</b>	<b>37.3</b>	<b>37.6</b>	<b>36.9</b>	<b>36.2</b>	<b>6.4</b>	<b>3.3</b>	<b>1.6</b>	<b>-1.3</b>
US	16.7	20.6	21.8	23.6	24.0	23.9	23.9	3.8	1.4	1.8	-0.2
JP	10.7	16.3	22.5	20.9	20.3	21.0	21.3	4.8	4.1	-1.6	1.0

Source: AMECO (DG ECFIN) and OECD Revenue Statistics

\* Estimates on the basis of 1997/98 data

The exclusion of the imputed wage of the self-employed and, thus, their taxes from the rate does not change the main conclusions suggested by data in table 4 (see table BI.6 in appendix B.I). The only remarkable difference between LETR in (22) and LITR in (23) is that the latter rate gives higher figures than the former one. At 41%, the effective tax rate on employed labour in the euro zone is almost 2 points higher than that including the self-employed as shown in table 4. The differences between the two rates vary from one country to another according to the differences between non-wage labour costs for employed and total labour. Indeed, such differences are larger in countries where the share of the self-employed is larger (viz. Greece, Portugal), while they are minor in more advanced economies such as, for instance, Germany, France, the UK, Japan, the US or the Nordic countries. Leaving aside differences in level, the evolution of the effective tax rate on employed almost perfectly replicates that described in table 4 for total employment.

## 6. THE EFFECTIVE TAX RATE ON CONSUMPTION

Following the general concept of effective taxation, the effective tax rate on consumption should be the ratio of tax revenues from consumption taxes to the pre-tax value of consumption. Consumption tax revenues can be accurately proxied by indirect taxes, which are available in AMECO. On the other hand, following MRT,

the pre-tax value of consumption can be calculated as private final consumption (PFC), *plus* government final consumption (GFC), *minus* the compensation of employees of general government (CEGG), *minus* consumption tax revenues (INVR). CEGG is deducted from the tax base since the government pays indirect taxes on the purchases of goods and non-factor services, while it is exempted from paying indirect taxes on goods and services it provides (see box 6.1).

**Box 6.1. The tax treatment of government wage consumption expenditures**

The exclusion of CEGG from the tax base is also applied in European Commission (2000c). However, this does not mean that there is a broad agreement as regards the treatment of such a series. For instance, in earlier versions of *EC2000* this variable was not deducted from the base. Recently, Carey and Tchilinguirian (2000) have proposed a variant of the MRT method, where they propose to make the tax base more comprehensive by not excluding CEGG. They argue that the fact that government wage consumption expenditures are not subject to indirect tax “*is not a compelling for using a partial consumption tax base. Many other elements of the consumption tax base are equally not subject to indirect taxes but remain in their base*”. However, they also conclude that the inclusion/exclusion of CEGG only changes the level of the rate without affecting very much comparisons across countries, as well as the major features of its evolution over time or. This is the reason way we follow here both MRT and *EC2000* and exclude CEGG from the consumption tax base.

Calculated in this way, it can be shown straightforwardly that the effective tax rate on consumption is the difference between the consumer price (a post-tax price) and the producer price (a pre-tax price) expressed as a percentage of the latter. In other words, the effective tax rate on consumption is the wedge between consumer and producer prices.

$$cetr = (P_c - P_p)/P_p \quad (24)$$

where  $P_c$  and  $P_p$  are the consumer and the producer prices respectively. Multiplying by the volume of the output consumed, we obtain the macroeconomic counterpart of (24):

$$CETR = INRV/(PFC + GFC - CEGG - INRV) \quad (25)$$

An equivalent definition of effective tax rate on consumption is applied in *EC2000*, as well as by ECFIN in *PFR2000* where the wedge is expressed in terms of consumer prices. As shown below, this rate has the advantage of being explicitly included in the formulae of the tax wedge on labour. It is called the consumption implicit tax rate and its expression is:

$$citr = (P_c - P_p)/P_c \quad (26)$$

Both (24) and (26) have the same informative power since

$$citr = cetr/(1+cetr) \quad (27)$$

In macroeconomic terms, the consumption implicit tax rate can be calculated as

$$CITR = INRV/(PFC + GFC - CEGG) \quad (28)$$

Having made clear that CETR and CTR are equivalent, we focus here on CTR since it is the rate used in *EC2000* and provides a straightforward way to obtain the labour tax wedge. However, CETR is also available in the ECFIN databank on effective taxation (see table BI.7 of appendix B.I).

One of the most distinguishing features of tax systems in the EU, as compared with the US or Japan, is the tax burden on consumption (table 5). Overall, at 21%, indirect taxes in the EU, expressed in terms of the value of final consumption, are twice that of the US. Indirect taxes represent 25% or more of the (inclusive of taxes) value of final consumption in France, Ireland, Luxembourg, Finland, Denmark, and Sweden. At the opposite extreme, in Germany, Spain, and the UK, the figure is clearly below the EU average, but always bigger than in the US or Japan.

<b>Table 5. Tax rates on consumption (CTR)</b>											
	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>70-79</b>	<b>80-89</b>	<b>90-98</b>	<b>99-01</b>
B	23.2	17.8	18.3	20.4	20.4	20.6	20.8	-3.9	0.1	2.1	0.4
D	19.2	17.7	17.8	17.0	17.9	18.0	18.4	-1.1	-0.2	-0.7	0.6
E	11.6	9.1	15.2	16.8	17.7	18.1	18.3	-2.5	6.3	1.6	0.6
F	23.6	23.3	23.1	24.8	24.7	24.1	23.9	-0.1	-0.2	1.8	-0.7
IRL	20.6	18.4	22.1	24.0	24.8	25.0	24.7	-3.4	4.3	1.9	-0.1
I	16.4	14.2	16.9	23.2	22.9	23.0	22.9	-2.9	2.2	6.3	0.0
L	12.2	14.8	19.5	25.3	25.7	26.1	26.7	1.9	5.1	5.9	1.0
NL	15.9	15.6	16.7	18.6	19.4	19.5	20.2	0.2	1.2	2.0	0.9
A	26.2	25.2	24.7	23.2	23.4	23.9	24.1	-0.8	-0.3	-1.5	0.7
P	15.6	19.0	21.1	22.0	22.7	23.4	23.8	0.5	2.4	0.9	1.1
FIN	22.0	22.8	26.7	24.3	24.4	24.5	24.9	0.7	5.3	-2.4	0.4
<b>EUR-11</b>	<b>19.4</b>	<b>18.1</b>	<b>19.1</b>	<b>20.6</b>	<b>20.9</b>	<b>21.0</b>	<b>21.2</b>	<b>-1.3</b>	<b>1.0</b>	<b>1.6</b>	<b>0.2</b>
DK	28.0	28.1	29.3	30.4	30.2	29.6	29.6	0.9	2.0	1.1	-0.6
GR	17.1	14.4	17.8	19.3	20.0	20.5	20.8	-0.3	1.5	1.4	0.8
S	20.6	22.2	28.6	25.8	28.0	24.5	24.2	1.0	4.8	-2.8	-3.8
UK	21.6	19.7	17.5	18.1	18.1	18.2	18.4	-3.1	-1.7	0.7	0.4
<b>EU-15</b>	<b>20.0</b>	<b>18.6</b>	<b>19.4</b>	<b>20.5</b>	<b>20.8</b>	<b>20.7</b>	<b>20.9</b>	<b>-1.4</b>	<b>0.7</b>	<b>1.2</b>	<b>0.1</b>
US	11.9	9.6	9.5	9.4	9.3	9.2	9.1	-2.3	-0.2	0.0	-0.2
JP	13.2	12.2	13.7	13.8	13.6	13.5	13.8	-1.1	1.1	0.1	0.2

Source: AMECO (DG ECFIN) and own calculations

The tax burden on consumption records a slightly positive evolution in industrial countries. During the last thirty years, the effective tax rate on consumption has increased by just 1 percentage point in the euro area, but has remained almost unchanged in the EU as a whole. The rate fell in most countries during in the seventies, likely due to a generalised fall in tariffs. In the eighties, average rates in the EU rose more than 1 percentage point. This is likely due to the introduction of VAT regime in countries such as, for instance, Spain or Portugal. In addition, VAT harmonisation at the late eighties, as well as the introduction of energy and environmental taxes could also have played a role. Such a trend continued and accelerated in nineties, when budgetary consolidation strategies in many Member States consisted, at least in a first phase, of increasing taxation (see *PFR2000*).

Commission's 2000 Spring Forecast point to a relatively small change in the consumption effective tax rate between 1999 and 2001. This is due to compensatory effects of falling taxes countries such as France, Denmark or Sweden, while, in the rest of Member States, consumption rates are expected to rise by at around 1 percentage point. Yet, the main cause of such increases seems to be of a cyclical nature, since, according to *PFR2000*, no significant reforms of indirect taxation are planned in most countries.

Finally, the definition of the consumption tax wedge in terms of producer prices, instead of consumer prices, does not change such conclusions about the evolution over time or the comparison between countries. The only effect of considering the value of final consumption net of indirect taxes is a generalised increase of the tax rate. In the case of the euro area and the EU-15 the difference is of 5 to 6 percentage points.

## 7. THE EFFECTIVE LABOUR TAX WEDGE

Following Layard, Nickell and Jackman (1991, page 209), the total wage *wedge* “*is the gap between the real labour costs of the firm, on the one hand, and the real, post-tax consumption wage of the worker, on the other*”. Disregarding the effects of the real price of imports<sup>38</sup>, the tax wedge arises because labour income is first taxed through social security contributions; then, workers have to pay income taxes on the remaining income, which in turn, once direct taxes have been deducted, will be subject to indirect taxes when consumed. In other terms, the tax wedge on labour is the difference between the gross wage deflated by the producer's price (real producer wage -  $w_p$ ) and the gross wage net of social security contributions and personal income taxes on labour income deflated by the consumer's price (the real consumer wage -  $w_c$ ). Therefore, we can define:

$$wedg = (w_p - w_c) / w_p \quad (29)$$

If  $P_p$  and  $P_c$  are respectively the producer price and the consumer price, and  $t_c$  is the consumption tax rate<sup>39</sup>, the following relationships can be obtained:

$$w_p = W_p / P_p \quad (30)$$

$$w_c = W_c / P_c \quad (31)$$

and

$$1 - t_c = P_p / P_c \quad (32)$$

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<sup>38</sup> Layard, Nickell and Jackman (1991) define the wedge as non-wage labour costs plus personal income taxes plus the difference between the consumer and the producer prices. This latter difference depends not only on consumption taxes but also on the real price of imports times the share of imports. We focus here on the tax components of the wedge and exclude external effects.

<sup>39</sup> The consumption tax rate is calculated here as the difference between the consumer price and the producer price expressed in terms of the former.

The relationship between the nominal gross wage ( $W_p$ ) and the nominal consumer wage ( $W_c$ ) is:

$$W_c = (1-t_i) (W_p - ssc) \quad (33)$$

$t_i$  being the personal income tax, and  $ssc$  being the total of social security contributions paid per unit of labour. Since  $ssc$  can be expressed in terms of the nominal gross wage as -see (6)-

$$nwlc = ssc/W_p \quad (34)$$

the tax wedge can be calculated as:

$$wedge = 1 - (1 - nwlc)(1 - t_i) (1 - t_c) \quad (35)$$

The macroeconomic counterpart of (35), i.e. in terms of effective tax rates, can be calculated as

$$WEDG = 1 - (1-NWLC)(1 - PITR)(1 - CITR) \quad (36)$$

NWLC, PITR and CITR have been defined in (6), (21) and (27) respectively. If one considers that the whole income of the self-employed is a capital income, so that wage income is only the income of the employed, the tax wedge for employed labour can be calculated as:

$$TWEL = 1 - (1-NWEL) (1 - PITR)(1 - CITR) \quad (37)$$

where NWEL is defined in (9).

When a part of the income of the self-employed (the imputed wage) is considered as labour income, total taxes on labour, thus including the incidence of indirect taxes, represent more than half the gross wage in both the euro area and the EU (table 6). This strongly contrasts with the figures for our main trade partners, where the tax wedge on labour in 1999 was slightly higher than 30%. The total burden on labour income in the Member States is not lower than in the US. In the UK, and, to a lesser extent, in Spain, Ireland, Portugal and Greece, the figure is well below the EU average. However, in Denmark and Sweden, the tax wedge represents more than 60% of the gross wage bill. Relatively high taxes (50-60%) are also borne by labour in Belgium, France, Austria, and Finland.

Indeed, the evolution of the tax wedge in the last three decades is the mirror image of that of its components. Overall, consumption taxes have contributed by little, while the changes observed in the tax wedge have been driven by changes in non-wage labour costs and in personal income taxes. In the seventies and the nineties, both rates contributed by comparable amounts. However, the bulk of the increase recorded by the tax wedge was due to the surge in social security contributions. According to Commission's 2000 Spring Forecast, the labour tax wedge is projected to fall by 1 percentage point in both the euro area and the EU. As shown in *PFR2000* such a fall is due to tax reform in the field of personal income taxes rather than to cuts in non-wage labour costs or in consumption taxes. The only country where a significant increase in the tax wedge is anticipated for the 1999-2001 period is Portugal (1.5%), where both the effective tax rate on labour and the effective tax rate on consumption

are projected to increase by 1 percentage point. At the opposite extreme, albeit for different reasons, the tax wedge is expected to fall by more than 2 percentage points in the Netherlands and Sweden. In the latter country, significant reductions in indirect and personal income taxes will be partially offset by the rise in non-wage labour costs. However, in the Netherlands the fall in the tax wedge is explained by a simultaneous reduction in social security contributions and in personal taxes. Germany, France, Ireland and Denmark are also countries where the tax wedge is projected to decrease significantly (by more than 1%) between 1999 and 2001.

**Table 6. Total tax wedge on labour (WEDG)**

	1970	1980	1990	1998	1999*	2000*	2001*	70-79	80-89	90-98	99-01*
B	44.9	49.0	52.5	56.3	56.1	55.8	55.3	5.6	3.0	3.8	-0.8
D	42.9	49.0	49.3	53.3	54.0	53.8	52.7	5.9	1.6	4.0	-1.3
E	22.3	29.3	38.9	41.5	42.3	42.6	42.8	5.8	9.9	2.6	0.5
F	43.9	49.8	53.6	55.9	56.8	55.8	55.7	5.0	3.8	2.3	-1.0
IRL	28.4	35.1	41.3	41.6	43.0	42.1	41.7	3.4	6.7	0.3	-1.2
I	33.7	38.0	46.7	50.3	50.3	50.0	50.0	2.5	8.1	3.6	-0.3
L	31.9	42.6	46.3	49.0	48.8	48.9	49.0	9.4	3.7	2.7	0.2
NL	41.1	47.5	48.8	47.8	49.2	48.7	46.5	6.3	1.9	-1.0	-2.7
A	45.8	50.0	50.9	54.7	54.5	54.2	54.0	3.6	0.6	3.8	-0.6
P	25.1	31.4	36.9	41.4	44.1	45.1	45.7	3.6	6.3	4.5	1.5
FIN	40.2	49.1	57.5	57.4	57.2	57.1	57.0	8.5	7.3	-0.1	-0.2
<b>EUR-11</b>	<b>39.7</b>	<b>45.3</b>	<b>48.8</b>	<b>51.8</b>	<b>52.4</b>	<b>52.0</b>	<b>51.5</b>	<b>5.0</b>	<b>3.9</b>	<b>3.0</b>	<b>-0.9</b>
DK	49.6	53.1	58.2	60.1	61.1	60.2	59.9	2.7	7.0	2.0	-1.2
GR	28.0	30.0	35.4	42.4	43.5	43.7	44.1	2.6	3.0	7.0	0.6
S	50.0	59.9	66.4	64.3	64.9	63.2	62.5	9.6	6.6	-2.0	-2.4
UK	40.2	39.8	38.6	39.0	38.7	38.6	38.6	-1.8	-1.7	0.3	-0.2
<b>EU-15</b>	<b>40.3</b>	<b>45.0</b>	<b>48.0</b>	<b>50.1</b>	<b>50.5</b>	<b>49.9</b>	<b>49.5</b>	<b>4.1</b>	<b>3.1</b>	<b>2.1</b>	<b>-1.0</b>
US	26.7	28.2	29.2	30.8	31.1	30.9	30.8	1.5	1.1	1.7	-0.3
JP	22.5	26.5	33.1	31.8	31.1	31.6	32.1	3.2	4.5	-1.3	1.0

Source: AMECO (DG ECFIN) and OECD Revenue Statistics

\* Estimates on the basis of 1997/98 data

The exclusion of the imputed wage of the self-employed from the tax base does not change the conclusions above (see table BI.10).

## 8. EFFECTIVE TAX RATES ON CAPITAL INCOME

A proxy to tax revenues obtained by governments from capital income can be calculated in the following way. Total taxes on capital income should include taxes on personal income from capital, taxes on corporate income and property taxes. Property taxes being a tax on the capital (wealth) stock of the economy can be considered as taxes on capital income, regardless whether they are paid by households or by business. Expressions (17) –CORV- and (18) –PWRV- respectively give the tax



revenues from corporate and property taxes consistent with AMECO data and calculated on the basis of the OECDRS. The tax revenues from taxes on personal income from capital can be obtained on the basis of (19) by multiplying PITR in (21) by the capital income of households, which is the net operating surplus of the economy after deducting taxes on corporate and property incomes and, eventually, excluding the imputed wage income of the self-employed.

The inclusion or exclusion of the imputed wage income of the self-employed partially determines the way the capital tax base is calculated. For instance, MRT and *EC2000* assume that the whole income of the self-employed is capital income, so that the tax base is the total, unadjusted operating surplus of the total economy. Accordingly, the effective tax rate on labour should coincide with LITR in (23). However, Carey and Tchilinguirian (2000) and *PFR2000* consider, as explained in the calculation of NWLC in (6), that a part of the income of the self-employed is wage income. In this case, the operating surplus of the economy, as calculated in the National Accounts, should be adjusted by such an imputed wage income of the self-employed.

A second issue concerning the capital tax base is whether the capital income should include or exclude depreciation or, in other words, whether one should use the net or the gross operating surplus. MRT and *EC2000* rightly argue that no capital taxes are levied on depreciation of fixed assets, so that the capital tax base should be calculated in net terms (excluding depreciation). However, Carey and Tchilinguirian (2000) argue that capital effective tax rates based on the net operating surplus depend on charges for depreciation, which vary a great deal from one country to another, mainly according to assumed differences in services lives, which are often based on relatively old information of tax lives. In other words, if the net operating surplus is used, differences in capital taxation across countries may be due to differences in assumed services lives of fixed assets rather than in any real difference in tax laws. On this basis, these authors suggest using the gross operating surplus as the tax base of capital. The gross operating surplus has also been used to obtain the capital effective tax rates in *PFR2000*.

It could also be argued that using the gross operating surplus seems to be coherent with the way the labour effective tax base is defined either in (22) –LETR- or in (23) –LITR-. In neither case, workers' expenditures to maintain, renovate and increase the stock of human capital is not deducted from the tax base. Yet, many (personal) tax laws do not foresee levying taxes on such expenditures. They usually establish (minimum) income thresholds and other deductible spending (viz. education, training), which are not taken into account to obtain the tax rates on labour income. Finally, it could also be argued that the net operating surplus exhibits more volatility over the cycle than the gross operating surplus, which may make it difficult to assess short to medium-term changes in the rates.

Leaving aside the discrepancies in the way the personal income tax is estimated, the consideration of the wage income of the self employed together with the way of treating charges for depreciation lead to four alternative definitions of the capital effective tax rate.

The first one, which coincides with *PFR2000* and Carey and Tchilinguirian (2000), assumes that the imputed wage income of the self-employed is not a capital income, while, in order to improve comparability across countries and reduce cyclical

fluctuations, it includes the gross operating surplus in the tax base. The capital effective tax rate is then:

$$KETG = (CORV + PWRV + Pitr*(NOSA - CORV - PWRV))/GOSA \quad (34)$$

Where GOSA is the gross operating surplus adjusted for the imputed wage income of the self-employed -see (5)-

$$GOSA = GOS - (LETB - COEL) \quad (35)$$

and NOSA is the net operating surplus adjusted for the wage income of the self-employed:

$$NOSA = NOS - (LETB - COEL) \quad (36)$$

Expression (34) will be used here as a benchmark against other definitions of the capital rate discussed below. For instance, following Carey and Tchilinguirian (2000), if the imputed wage of the self-employed is not treated as a capital income, but one considers that depreciation should be excluded from the base, the capital effective tax rate becomes:

$$KETN = (CORV + PWRV + Pitr*(NOSA - CORV - PWRV))/NOSA \quad (37)$$

However, if the whole income of the self-employed is considered as capital income, the effective tax rate on capital income unadjusted for the imputed labour income of the self-employed would be:

$$KITG = (CORV + PWRV + (NWRV - ELRV) + Pitr*(NOS - (NWRV - ELRV) - CORV - PWRV))/GOS \quad (38)$$

when depreciation is not excluded from the base, and

$$KITN = (CORV + PWRV + (NWRV - ELRV) + Pitr*(NOS - (NWRV - ELRV) - CORV - PWRV))/NOS \quad (39)$$

if only the net operating surplus is included in the base<sup>40</sup>.

Table 7 shows synthetic data on the benchmark effective tax rate of capital, KETG, in (34). At 21%, the tax rate on capital income in the euro zone is lower than in both the EU-15 (24%) and the US (23%). Although it is still higher than in Japan (19%), it is worth highlighting that, as shown in more detail below, the differences between European countries and their main trade partners are much smaller for capital taxes than for labour taxes. Where Member States are concerned, Luxembourg and the UK set the highest tax burden on capital income (34-35%)<sup>41</sup>. Other countries with relatively high capital taxes are Italy, Denmark and Sweden. At the low end of the

<sup>40</sup> We use the letter "I" from "implicit" as a quick reference to the fact the KITG and KITN have been calculated by assuming that the whole income of the self-employed is considered capital income as in EC2000.

<sup>41</sup> Note that such a high effective tax rate of capital in Luxembourg does not take account of special fiscal treatment of capital income of non-residents.

rate scale, in Germany, Spain, Austria and Greece, the capital effective tax rate is lower than in the euro zone.

Compared with the tax rates on labour, those on capital have remained fairly stable during the last thirty years. In the early 2000's, the fall in personal income taxes, as well as fiscal incentives for risk and venture capital, are inducing generalised cuts in capital taxes. Indeed, as mentioned in *PFR2000*, a part of such reductions might be due to cyclical factors rather than to discretionary reforms. Anyway, on the basis of KETG, it is difficult to conclude that potential capital tax competition is lowering the tax burden on capital income. However, on the same grounds, it also seems evident that labour income, and not capital income, has been bearing the bulk of the additional tax burden generated since 1970.

**Table 7. Effective tax rates on capital (adjusted gross OS -KETG)**

	1970	1980	1990	1998	1999*	2000*	2001*	70-79	80-89	90-98	99-01*
B	16.0	21.3	20.1	23.8	23.4	23.7	23.5	6.4	-0.3	3.7	0.1
D	18.3	19.0	16.2	15.4	15.9	16.0	14.8	1.3	-0.9	-0.8	-1.2
E	8.9	11.6	19.9	18.5	18.5	18.4	18.5	2.2	7.5	-1.4	-0.1
F	15.5	17.7	17.9	21.6	22.8	22.0	21.8	0.5	0.4	3.7	-1.0
IRL	26.9	18.5	18.9	20.5	20.8	19.8	19.5	-9.9	-0.5	1.6	-1.2
I	11.9	15.8	22.7	25.5	26.5	25.6	25.4	2.6	6.3	2.8	-1.1
L	13.7	27.4	31.0	34.3	34.0	33.4	32.2	14.3	2.2	3.4	-1.7
NL	19.5	22.5	21.5	24.3	24.9	24.0	23.3	2.5	-2.0	2.8	-1.6
A	15.5	16.9	17.5	19.2	18.8	17.9	17.3	1.8	0.6	1.7	-1.5
P	9.2	8.2	18.0	22.1	24.6	25.4	26.0	-1.3	7.0	4.0	1.4
FIN	14.6	13.2	15.2	24.3	24.2	24.4	24.3	-1.2	3.0	9.1	0.1
<b>EUR-11</b>	<b>15.5</b>	<b>17.5</b>	<b>18.8</b>	<b>20.2</b>	<b>20.9</b>	<b>20.6</b>	<b>20.0</b>	<b>1.6</b>	<b>1.6</b>	<b>1.4</b>	<b>-0.9</b>
DK	23.3	20.9	23.1	28.4	29.0	28.8	29.0	-1.2	3.7	5.2	0.0
GR	9.2	8.6	12.4	20.3	19.5	18.5	17.8	-0.6	0.9	7.8	-1.7
S	20.1	17.8	22.4	28.5	27.9	27.5	27.3	-1.4	7.5	6.1	-0.6
UK	35.2	31.8	34.4	34.1	35.0	34.5	34.0	-7.3	6.2	-0.2	-1.0
<b>EU-15</b>	<b>19.0</b>	<b>19.7</b>	<b>21.3</b>	<b>22.9</b>	<b>23.7</b>	<b>23.5</b>	<b>23.0</b>	<b>-0.3</b>	<b>2.6</b>	<b>1.7</b>	<b>-0.7</b>
US	26.3	22.4	19.9	22.3	22.8	22.7	22.9	-3.0	-2.0	2.5	0.2
JP	19.0	30.1	29.5	23.5	18.7	17.9	17.6	9.9	1.7	-6.0	-1.1

Source: AMECO (DG ECFIN) and OECD Revenue Statistics

\* Estimates on the basis of 1997/98 data

Assuming that the whole income of the self-employed comes from capital does not change the main conclusions drawn on the basis of the KETG. This not only applies to the evolution of the rates but also to their levels. For instance, for the EU as a whole KITG in (38) is 24.3% in 1999, which compares with the figure of 23.7% in table 7. Finally, leaving aside a generalised increase of the rates, KITN in (39), compared with the benchmarks in table 7, does not alter the main conclusions either. Therefore, at first glance, we can conclude that KETG and KITG are almost

equivalent, while the major differences between KETG and KITN concern the levels rather than the evolution of the rates.

## 9. COMPARING ALTERNATIVE TAX RATES IN AMECO

Comparisons on the basis of synthetic tables in previous sections seem to suggest that alternative ways to calculate the tax rates on labour, capital and consumption on the basis of AMECO data lead to quite similar conclusions. Alternative criteria produce indicators differing in levels, while the differences are small or even negligible in terms of their evolution over time or in terms of the relative position of countries. This section presents more detailed analyses supporting this view.

For each tax base (labour capital and consumption), we compare the corresponding alternative indicators discussed in sections 3 to 8. For labour taxes we compare LETR in (18) with LITR in (19). In the case of consumption, we compare CETR in (21) and CITR in (24). Finally, where capital taxes are concerned, we carry out pair-wise comparisons of the four alternative indicators defined in section 8: KETG in (34), KETN in (37), KITG in (38) and KITN in (39). Indeed, since LETR and LITR have been obtained on the basis of the same personal income tax rate -PITR in (17)-, they only differ in the indicator of non-wage labour costs. Therefore, comparing LETR and LITR is equivalent to compare NWLC in (2) and NWEL in (5). Analogously, comparing LETR and LITR is also equivalent to compare WEDG in (32) and TWEL in (33), since the latter two wedges only differ in the indicators of non-wage labour costs. The evidence we provide is based on both across and within-country comparisons, and it is complemented by means of tax convergence analyses.

### 9.1. Across-country comparisons

A quite direct way to compare alternative indicators of effective taxation is to look at their levels and changes across the country sample. Table 8 shows the cross-country correlation coefficients between levels of alternative indicators for labour, consumption and capital effective tax rates over the 1970-1999 period<sup>42</sup>. In order to avoid superfluous noise coming from cyclical fluctuations, we have compared five-year averages (70-74, 75-79, 80-84, 85-89, 90-94 and 95-99).

**Table 8. Cross-country correlations for five-year averages and rank correlations.**

	LETR/ LITR	CITR/ CETR	KETG/ KETN	KETG/ KITG	KETG/ KITN	KETN/ KITG	KETN/ KITN	KITG/ KITN
70-74	0.954 (0.968)	0.998 (1.000)	0.944 (0.947)	0.883 (0.831)	0.832 (0.761)	0.858 (0.875)	0.832 (0.802)	0.988 (0.964)

<sup>42</sup> We also calculated trend values obtained on the basis of the Hodrick-Prescott filter. The results are not shown here, since they are almost identical to the ones obtained on the basis of cyclically unadjusted series.

75-79	0.970 (0.919)	0.998 (1.000)	0.845 (0.757)	0.828 (0.840)	0.751 (0.721)	0.768 (0.804)	0.758 (0.761)	0.967 (0.951)
80-84	0.957 (0.949)	0.998 (1.000)	0.892 (0.787)	0.883 (0.914)	0.809 (0.835)	0.853 (0.864)	0.814 (0.826)	0.970 (0.944)
85-89	0.947 (0.954)	0.997 (0.998)	0.877 (0.789)	0.904 (0.916)	0.802 (0.802)	0.882 (0.842)	0.881 (0.884)	0.953 (0.912)
90-94	0.908 (0.933)	0.997 (1.000)	0.617 (0.568)	0.841 (0.832)	0.644 (0.591)	0.729 (0.689)	0.847 (0.895)	0.899 (0.805)
95-99	0.908 (0.907)	0.997 (1.000)	0.756 (0.788)	0.858 (0.821)	0.744 (0.814)	0.787 (0.788)	0.854 (0.911)	0.945 (0.939)

Where labour taxes are concerned, correlation coefficients between the five-year average levels of LETR and LITR range from 91% in the nineties to 97% in the late seventies. This means that across-country differences in levels are equally reflected by both indicators and that, on this basis, the inclusion or exclusion of the imputed wage income of the self-employed does not make much of a difference as regards the relative tax burden on labour across countries. However, it could be argued that even small differences in levels between LETR and LITR may imply large differences in the ordering of countries in terms of the tax burden borne by labour. This could happen when the dispersion of the rates either in LETR and/or LITR were low. To test such a possibility we have calculated the Spearman rank correlation coefficients, which are shown between brackets in table 8. It is quite clear that rank correlations reproduce quite closely the standard correlation coefficients. It turns therefore out that, when using AMECO data, the treatment of the income of the self-employed does not basically alter the ordering of countries on the basis of their tax burdens on labour income.

The same conclusions are reached regarding consumption taxes. The only difference is that the results are even less ambiguous in this case. As suggested by (23), at two-digit precision, CITR and CETR are exactly the same variable (both correlation coefficients are equal to 1). In other words, calculating the tax rate on the basis of the pre-tax (21) or the after-tax (24) base only changes the level but not the relative tax burdens on consumption. Neither does it change the ordering of countries in terms of such burdens.

As expected, more divergences are found when comparing alternative indicators for the tax burden on capital income. However, such divergences are not large in some cases. For instance (last column of table 8), it seems that if the whole income of the self-employed is considered an income from capital, the inclusion (KITG) or exclusion (KITN) of depreciation from the tax base does not alter the relative tax burden across countries and the ordering in a significant way. Analogously (4<sup>th</sup> column of table 8), if the tax base is calculated on the basis of the gross operating surplus, the consideration of the income of the self-employed only partially (KETG) or totally (KITG) as capital income does not either induce substantial changes in the conclusions regarding tax burdens and their orderings across countries.

All in all, figures in table 8 seem to suggest that using alternative tax rate indicators calculated on the basis of AMECO data does not lead to significant differences in the relative tax burdens across countries or in their ordering. This is particularly true for labour and consumption taxes<sup>43</sup>.

If the major goal of computing effective tax rates is to contribute to the assessment of tax reforms, one should not care very much about levels, but rather about changes in time. Table 9 shows the correlation coefficients between the changes in alternative tax indicators. Growth rates have been calculated by comparing five-year averages and are expressed in percentages of the observed rate in the base period<sup>44</sup>. Correlations displayed in table 9 reinforce the conclusions reached on the basis of table 8. LETR and LITR, on the one hand, and CITR and CETR, on the other hand, are, statistically speaking, the same series, with correlation coefficients close to 1. This applies to changes in the long run (the late nineties over the early seventies and the early eighties), as well as to changes in the short run (2001 over 1999). More significant differences are found between some alternative indicators of capital tax rates (viz. KETN versus KITG, KETN versus KITN in the long run, as well as KETG versus KITN, KETG versus KETN, and KETN versus KITG in the short run). Yet, in all the cases, correlations coefficients are significant and positive, which means that overall trends are well reflected by any of the four capital tax rate indicators.

**Table 9. Cross-country correlations for long and short-run changes.**

	LETR/ LITR	CITR/ CETR	KETG/ KETN	KETG/ KITG	KETG/ KITN	KETN/ KITG	KETN/ KITN	KITG/ KITN
70-74/ 93-97	0.961	0.999	0.857	0.863	0.824	0.709	0.700	0.987
80-84/ 93-97	0.943	0.999	0.928	0.841	0.816	0.699	0.739	0.963
1999/ 2001	0.988	0.999	0.751	0.926	0.652	0.743	0.860	0.812

Where the capital tax rate is concerned, we can conclude that a choice needs to be made as regards the treatment of the income of the self-employed or, alternatively, on the way to consider depreciation. If the operating surplus is computed in gross terms, adjusting it or not for the imputed wage of the self-employed (KETG versus KITG) does not seem to have implications for across-country comparisons. Analogously, once the analyst has decided to consider the whole income of the self-employed as capital income, calculating the (unadjusted) operating surplus in gross (KITG) or net (KITN) terms has not consequences either.

<sup>43</sup> Thus for non-wage labour costs and labour tax wedges.

<sup>44</sup> In doing so, we avoid scale effects, which could arise if we compare changes in terms of first differences directly.

## 9.2. Within-country comparisons

Albeit very common, cross-country comparisons may not be the only goal of measuring and analysing effective taxation. The concern may also be the evolution of tax rates within a particular country. We start by within-country comparisons between the alternative indicators of the effective tax rates of labour, consumption and capital in levels. Table 10 shows simple correlation coefficients between the series (LETR versus LITR, CETR versus CITR, KETG versus KETN, etc.) for each individual country, the euro area and the EU as a whole.

**Table 10. Within-country correlations**

	LETR/ LITR	CITR/C ETR	KETG/ KETN	KETG/ KITG	KETG/ KITN	KETN/ KITG	KETN/ KITN	KITG/ KITN
B	0.997	0.999	0.850	0.931	0.913	0.862	0.916	0.987
DK	0.999	0.999	-0.000	0.960	0.500	0.234	0.751	0.709
D	0.991	0.999	0.754	0.724	0.041	0.616	0.426	0.626
GR	0.986	0.999	0.958	0.780	0.775	0.858	0.865	0.997
E	0.982	0.999	0.935	0.973	0.967	0.901	0.906	0.999
F	0.999	0.999	0.683	0.933	0.924	0.556	0.706	0.976
IRL	0.998	0.999	0.847	0.133	0.080	-0.171	-0.129	0.979
I	0.991	0.999	0.949	0.980	0.973	0.947	0.959	0.998
L	0.942	0.999	0.609	0.981	0.952	0.505	0.735	0.944
NL	0.954	0.999	0.630	0.574	0.530	0.198	0.363	0.960
A	0.999	0.999	0.364	0.769	0.683	0.469	0.493	0.988
P	0.999	0.999	0.836	0.777	0.792	0.962	0.967	0.999
FIN	0.998	0.999	-0.181	0.799	0.193	0.277	0.767	0.717
S	0.999	0.999	0.553	0.974	0.566	0.666	0.992	0.683
UK	0.982	0.999	0.742	0.954	0.746	0.714	0.899	0.836
US	0.999	0.999	0.957	0.990	0.949	0.943	0.974	0.965
JAP	0.999	0.999	0.873	0.673	0.447	0.288	0.515	0.948
EUR-11	0.999	0.998	0.566	0.954	0.918	0.556	0.687	0.980
EU-15	0.999	0.999	0.573	0.922	0.851	0.554	0.764	0.950

It seems quite clear that LETR and LITR, for labour, and CITR and CETR, for consumption, have basically the same informative content in all cases. KITG and KITN are also quite similar in most countries with correlation coefficients close to 1. The exceptions are DK, D, FIN and S, where the correlation coefficients are lower than 80%, but always significant, positive and higher than 60%. It also seems that KETG and KITG follow the same evolution in most Member States. The most outstanding exceptions are Ireland, where the coefficient is non significant, and the Netherlands and Japan, where correlations are relatively low. The rest of pair-wise comparisons provide more ambiguous results. Low correlation coefficients for the

EUR-11 and the EU-15 in KETG versus KETN, KITN versus KITG and KETN versus KITN are particularly revealing.

Table 10 broadly supports the conclusions reached on the basis of cross-country comparisons. LETR and LITR, on the one hand, and CITR and CETR, on the other hand, are basically the same variable. Where capital rates are concerned a decision has to be made about the way the operating surplus is measured. If the capital tax base is measured in gross terms, considering the income of the self-employed totally (KITG) or partially (KETG) as capital income does not make any significant difference in most countries. Alternatively, if the whole income of the self-employed is considered as capital, measuring the tax base including (KITG) or excluding (KITN) depreciation does not lead to series statistically different.

However, it could be argued that such correlations may be spurious and simply reflect the fact that the series follow positive paths in most cases. In order to avoid this problem, we have calculated simple correlations for the cyclical component of the series (table 11) and for annual growth rates (table 12). The cyclical component has been calculated as the difference between the actual and the cyclically adjusted series expressed in percentage points of the latter, which have been obtained by using the Hodrick-Prescott filter.

**Table 11. Within-country correlations. Cyclical components**

	LETR/ LITR	CITR/C ETR	KETG/ KETN	KETG/ KITG	KETG/ KITN	KETN/ KITG	KETN/ KITN	KITG/ KITN
B	0.992	0.999	0.531	0.891	0.745	0.745	0.907	0.940
DK	0.999	0.999	0.071	0.956	0.409	0.297	0.910	0.625
D	0.990	0.999	0.316	0.953	0.637	0.352	0.842	0.743
GR	0.871	0.999	0.923	0.660	0.656	0.643	0.661	0.997
E	0.941	0.999	0.821	0.829	0.778	0.625	0.672	0.981
F	0.992	0.999	0.683	0.939	0.813	0.732	0.931	0.913
IRL	0.986	0.999	0.916	0.937	0.911	0.839	0.925	0.958
I	0.783	0.999	0.791	0.768	0.762	0.515	0.632	0.978
L	0.978	0.999	0.634	0.679	0.786	0.641	0.942	0.819
NL	0.978	0.999	0.818	0.781	0.709	0.824	0.910	0.937
A	0.987	0.999	0.425	0.837	0.669	0.609	0.786	0.934
P	0.966	0.999	0.540	0.499	0.580	0.888	0.898	0.994
FIN	0.997	0.999	-0.195	0.824	0.071	0.244	0.883	0.576
S	0.999	0.999	0.203	0.941	0.277	0.472	0.989	0.546
UK	0.997	0.999	0.803	0.990	0.903	0.792	0.959	0.912
US	0.996	0.999	0.837	0.996	0.894	0.854	0.986	0.916
JAP	0.981	0.999	0.711	0.889	0.852	0.405	0.502	0.959
EUR-11	0.960	0.999	0.146	0.887	0.456	0.003	0.731	0.559
EU-15	0.982	0.999	0.526	0.949	0.743	0.399	0.878	0.732

At a first glance, tables 11 and 12 lead to the same conclusions as tables 8, 9 and 10. This is pretty obvious for labour (LETR versus LITR)<sup>45</sup> and consumption (CETR versus CITR) tax rates. It is also clear for the two alternative tax rates using the gross operating surplus (KETG and KITG) and, to a lesser extent, for the two tax rates

<sup>45</sup> Note that Italy is to some extent an exception in the case of labour taxes, especially where the growth rates are concerned.



considering the whole income of the self-employed as capital income (KITG and KITN). In addition, while tables 8 to 10 indicated that KITG and KITN were similar, tables 11 and 12 reveal noticeable differences in some countries, including the EUR-11 and EU-15 aggregates.

**Table 12. Within-country correlations. Growth rates**

	LETR/ LITR	CITR/C ETR	KETG/ KETN	KETG/ KITG	KETG/ KITN	KETN/ KITG	KETN/ KITN	KITG/ KITN
B	0.991	0.999	0.639	0.885	0.734	0.807	0.932	0.937
DK	0.999	0.999	0.014	0.925	0.303	0.327	0.931	0.606
D	0.990	0.999	0.648	0.970	0.787	0.698	0.946	0.853
GR	0.840	0.999	0.970	0.850	0.851	0.802	0.813	0.999
E	0.939	0.999	0.872	0.810	0.791	0.722	0.772	0.990
F	0.993	0.999	0.726	0.956	0.839	0.757	0.939	0.915
IRL	0.992	0.999	0.916	0.919	0.902	0.839	0.913	0.969
I	0.575	0.999	0.807	0.528	0.554	0.353	0.505	0.973
L	0.986	0.999	0.592	0.978	0.723	0.651	0.967	0.781
NL	0.980	0.999	0.774	0.798	0.728	0.822	0.924	0.949
A	0.983	0.999	0.425	0.875	0.733	0.633	0.830	0.934
P	0.967	0.999	0.384	0.487	0.591	0.843	0.843	0.990
FIN	0.995	0.999	-0.224	0.792	0.130	0.227	0.801	0.668
S	0.998	0.999	0.104	0.945	0.207	0.355	0.982	0.464
UK	0.997	0.999	0.849	0.987	0.924	0.821	0.968	0.921
US	0.997	0.999	0.853	0.995	0.901	0.867	0.987	0.920
JAP	0.983	0.999	0.815	0.956	0.949	0.672	0.746	0.980
EUR-11	0.934	0.998	0.310	0.845	0.584	0.204	0.718	0.754
EU-15	0.965	0.998	0.504	0.897	0.664	0.397	0.874	0.726

Consequently, while one can still maintain that, once the tax base is measured on the basis of the gross operating surplus, including or excluding the imputed wage income of the self-employed does not make any significant difference, the treatment of depreciation may induce important divergences between alternative capital tax rates (see also Carey and Tchilinguirian, 2000).

### 9.3. Convergence analyses

In *PFR2000* a convergence analysis is carried out on the basis of three of the indicators of effective taxation defined above. The indicators used there are LETR in (18), CITR in (24) and KETG in (34) for, respectively, labour consumption and capital. Convergence is measured through the ratio between the standard deviation and the mean, and is expressed in percentage points. The conclusions can be summarised as follows<sup>46</sup>:

- The tax burden has been converging both within and outside the EU. Yet, dispersion is lower among Member States. In addition, the bulk of the convergence process took place during the seventies and the early eighties, when

<sup>46</sup> See European Commission (2000a) Part IV, chapter 3 (graph IV.5).

the dispersion coefficient fell from 35 to 25% in the EU (from 38% to 29% among the MS, the US and Japan);

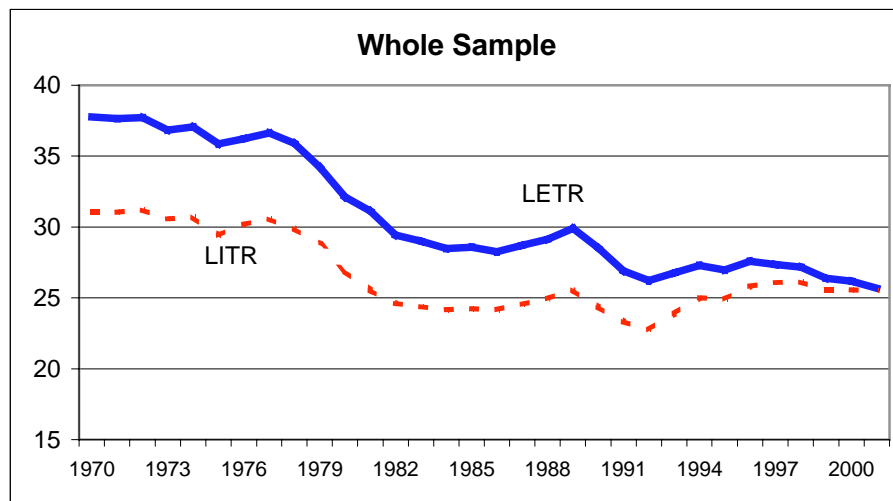
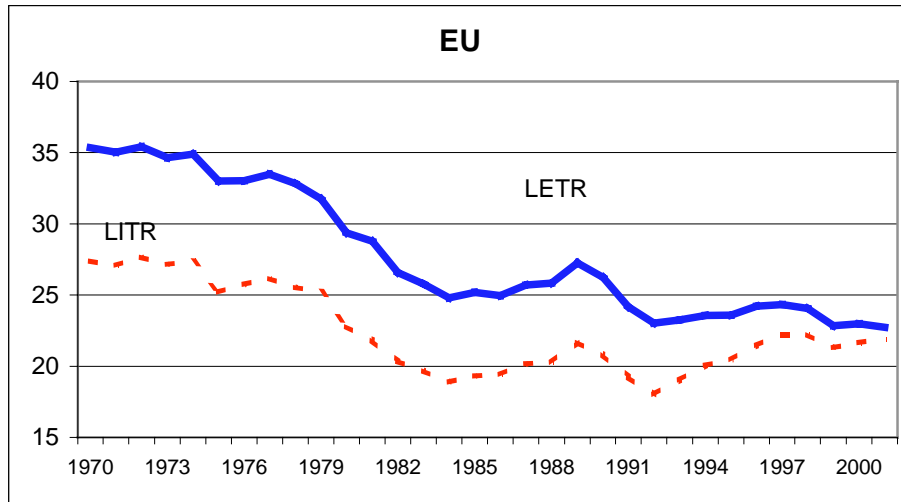
- The tax burden on consumption has also been converging since the seventies. The process is much more notorious within than outside the EU. As a matter of fact, the process has clearly accelerated in the EU since the late eighties. Between 1988 and 1999 the dispersion coefficient fell from 24% to 16%; and
- Where capital taxes are concerned, leaving aside the effects of cyclical fluctuations, the tax burden has been steadily decreasing since the seventies both in the EU and in other industrial countries. In addition, dispersion coefficients are broadly similar outside and inside the Union. Overall, the dispersion coefficient fell from 43% in the early seventies to 22% in the late nineties.

Graph 1 displays the evolution of dispersion coefficients of LETR and LITR among EU Member States (first panel) and among the whole sample, thus including the US and Japan (second panel).

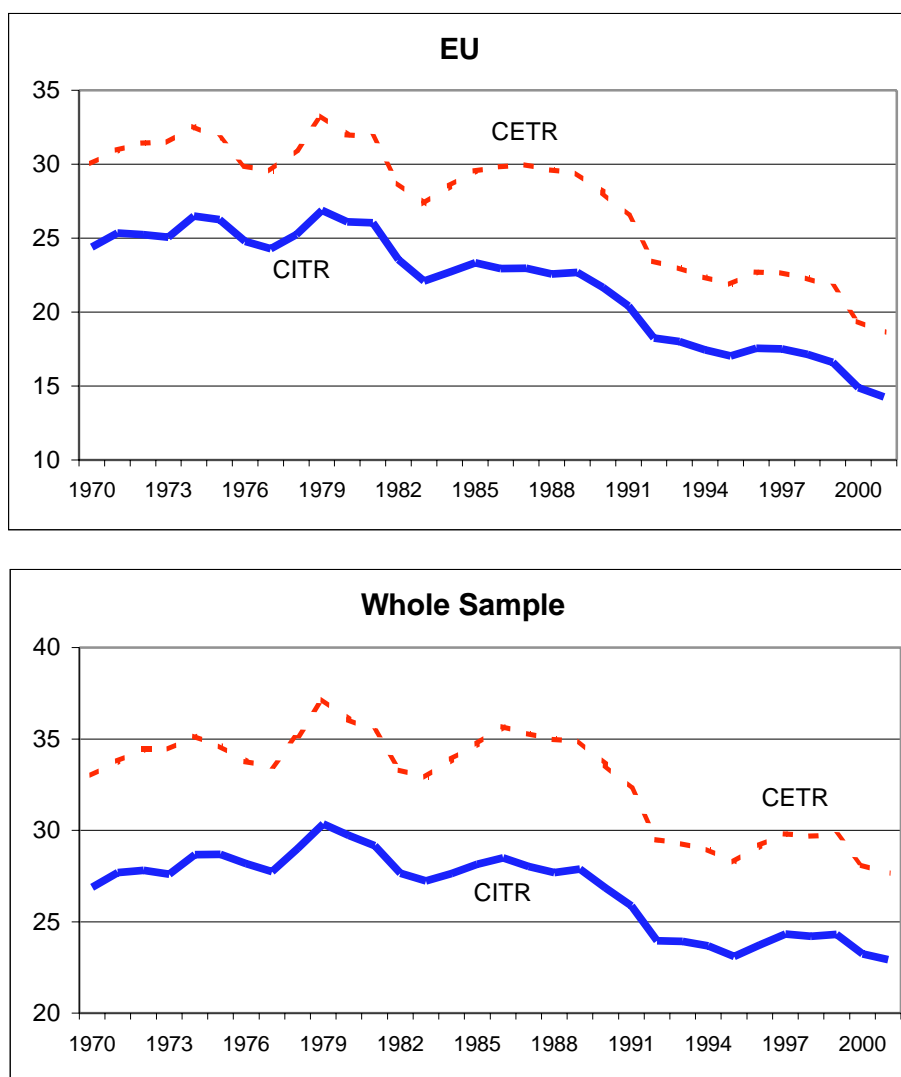
The conclusion seems to be fairly clear. Not only do the dispersion coefficients LETR and LITR present quite similar profiles, both outside and within the EU, but the differences are fading out with time. In the late nineties, dispersion coefficients for LETR and LITR are broadly similar. This provides further evidence that, where the tax burden on labour is concerned, including or excluding the imputed wage income of the self-employed does not make much of a difference.

Graph 2 is the counterpart of graph 1 for consumption taxes. Regardless whether we use CETR or CITR we observe the same profile in both the EU and the whole sample. The only difference is that the dispersion coefficients are overall lower for CITR than for CETR. Leaving aside this fact, it is clear that both indicators record the same type of changes, especially the acceleration of the convergence process in the late eighties in accordance with VAT harmonisation. However, both CETR and CITR show a stagnation of the dispersion coefficients in the nineties, while, indeed, dispersion for both CETR and CITR is much lower in the EU than in the whole sample.

**Graph 1. Dispersion coefficients for tax rates on labour, 1970-2001.**

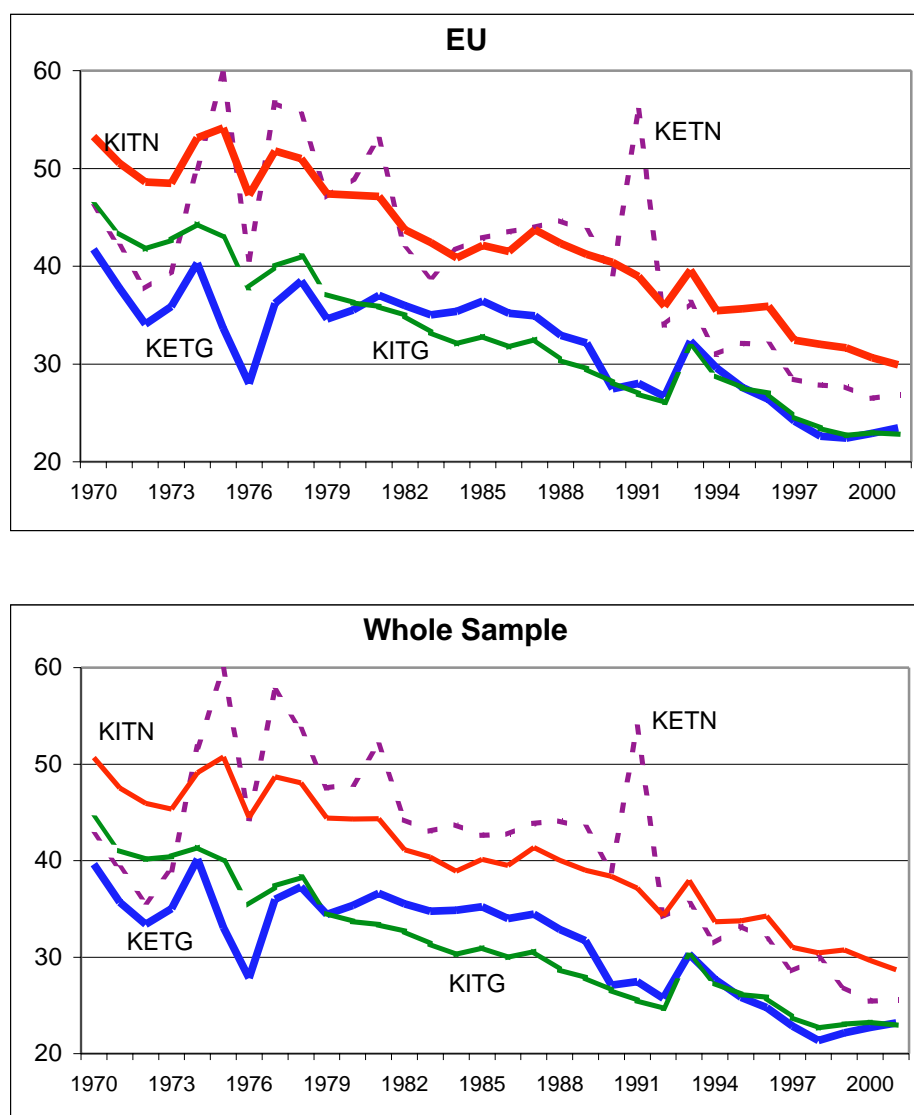


**Graph 2. Dispersion coefficients for tax rates on consumption, 1970-2001.**



Finally, graph 3 displays the evolution of the dispersion coefficients for KETG, KETN, KITG and KITN. Leaving aside differences in levels, as well as the magnitude of cyclical swings, the four indicators are witness of the same type of convergence. On the one hand, the process is very strong with drastic reductions of dispersion coefficients over the last three decades. On the other hand, there are no noticeable differences between the EU (first panel) and the whole (second panel) samples. Capital tax convergence, unlikely consumption, is driven by international factors going beyond the processes of economic integration in the EU.

**Graph 3. Dispersion coefficients for tax rates on capital, 1970-2001.**



However, some differences between the four indicators are worth mentioning. *First*, while the evolution of dispersion coefficients for KETG, KITG and KITN is rather smooth, that of KETN is subject to strong cyclical fluctuations. In other words, cyclical swings are amplified when excluding the imputed wage income of the self-employed from the net operating surplus. Overall, the net surplus as a capital tax base leads to higher dispersion than the gross operating surplus. This is in agreement with findings by Carey and Tchilinguirian (2000). Nevertheless, interestingly, once the analyst has made a decision concerning the treatment of depreciation (viz. using KITN/KETN or KITG/KETG), the way the imputed wage income of the self-employed is considered, whether labour or capital income, has no impact on convergence analyses. Leaving aside cyclical fluctuations, the dispersion coefficients

of KETN and KITN, on the one hand, and of KETG and KITG, on the other hand are almost identical. This is especially evident in the cases of KETG and KITG, once the early seventies are excluded from the sample.

#### **9.4. Wrapping up**

Overall, the analysis in this section seems to support the choice taken in *PFR2000*, where, leaving aside Pitr, the focus was on LETR (then on NWLC and WEDG), Citr and KETG. More particularly:

1. Including or not the imputed wage income of the self-employed in the calculations for the tax burden on labour does not alter at all the conclusions.
2. Defining the consumption tax wedge in terms of producer (CETR) or consumer (Citr) prices leads to indicators with exactly the same informative content from a statistical point of view.
3. Where capital taxes are concerned, the analyst needs to make a decision either concerning the tax treatment of depreciation or the treatment of the imputed wage income of the self-employed. In more concrete terms, we have seen that:
  - If the whole income of the self-employed is considered as a capital income, defining the tax base including (KITG) or excluding (KITN) depreciation does not make much of a difference for across-country comparisons both in terms of levels, ranks or short and long-run changes. It does not make a big difference either when the goal is to analyse tax convergence. However, if the interest of the researcher is centred on within-country analyses, then relatively significant differences may arise between KITG and KITN in some countries (and EU aggregates) both in terms of levels, cyclical components and, especially, growth rates.
  - On the contrary, if the analyst opts for defining the operating surplus in gross terms, the consideration of the imputed wage income of the self-employed as labour (KETG) or as capital income (KITG) does not lead to large differences in within-country analyses, while it does not alter either the conclusions about across-country comparisons and tax convergence. Overall, and more important, in terms of the cyclical component, as well as in terms of growth rates, both capital tax rates are also identical in all the countries, except in Portugal and, to a lesser extent, in Greece. These are the two countries where the share of the self-employed is the largest in the sample due to the relative importance of the primary sector in the total economy.

#### **10. COMPARISONS BETWEEN AMECO AND OTHER DATABANKS**

As shown in sections 2 to 8, the differences between ECFIN/PFR2000 (European Commission 2000a), *EC2000* (European Commission, 2000c) and OECD (Carey and Tchilinguirian, 2000) databanks on effective (implicit) taxation consist of both the

criteria applied to define particular rates and the input data used to obtain the tax revenues and bases. Given such differences, one should expect a low degree of similarity between comparable rates in the three databanks. Yet, as shown below, the differences are much smaller than expected in a number of relevant cases, especially where labour and consumption taxes are concerned.

### 10.1. Comparing ECFIN and the OECD

The OECD calculates an indicator of the effective tax burden on labour (LTRO hereafter), which resembles very much LETR in (22). Both LETR and LTRO consider that a part of the income of the self-employed (the imputed wage) is labour income. However, leaving aside differences in data sources<sup>47</sup>, the most important difference between both rates is the way the personal income tax rate (PITR) is calculated. The OECD uses the MRT definition, while ECFIN uses the approximation explained in section 4.

The first column of table 13 shows the across-country correlation coefficients between LETR and LTRO for the average levels in 1980-1984, 1985-1989, 1990-1993 and 1994-1997, as well as for the change (in percentage of the base period) in the five-year average levels between the early eighties (80-84) and the late nineties (93-97). The periods and countries have been chosen in function of data availability in the paper by Carey and Tchilinguirian (2000), which only includes data between 1980 and 1997. Rank correlation coefficients are shown between brackets.

**Table 13. Comparing AMECO and OECD. Cross-country correlations**

	LETR/ LTRO	CETR/ CT2O	KETG/ KTGO	KETN/ KTNO
AV80-84	0.965 (0.937)	0.931 (0.909)	0.948 (0.923)	0.963 (0.266)
AV85-89	0.967 (0.937)	0.913 (0.909)	0.946 (0.895)	0.785 (0.566)
AV90-93	0.971 (0.921)	0.923 (0.941)	0.683 (0.561)	0.813 (0.764)
AV94-97	0.968 (0.921)	0.933 (0.897)	0.743 (0.697)	0.821 (0.850)
Growth 80-84/ 93-97	0.928 (0.874)	0.893 (0.734)	0.848 (0.734)	0.726 (0.811)

<sup>47</sup> LETR is based on AMECO data and on some series of the OECD Revenue Statistics, while LTRO is calculated from data of OECD National Accounts, main aggregates and detailed tables, and from OECD Revenue Statistics.

Where five-year average levels are concerned, both tax rates are almost identical, with rather time-stable correlation coefficients of at around 97%. In addition, albeit somewhat lower, both labour tax rates lead to quite similar conclusions regarding comparisons of growth rates across countries between the early eighties and the mid nineties. Finally, rank correlations overall support the conclusion that once personal income taxes on labour income are calculated *à la* MRT, using different proxies of household income and different macroeconomic databanks does not make much of a difference when assessing the level and evolution of the effective tax burden on labour across OECD countries.

Carey and Tchilinguirian (2000) consider two alternative ways of calculating the effective tax burden on consumption. The first one, CT1O, does not deduct wages paid by general government, while the second one, CT2O, does. Both rates use a measure of tax revenues -items RS5110, RS5121, RS5123, RS5126, RS5128 and RS5200 of the OECDRS databank-, which is quite close to the AMECO concept of indirect taxes. In addition, also in both cases, tax revenues are excluded from the tax base. On this basis, table 13 compares ECFIN's CETR in (25) with CT2O of the OECD. Overall, CT2O and CETR seem to be broadly similar.

Finally, where capital taxes are concerned, Carey and Tchilinguirian (2000) calculate two rates. Both exclude the imputed wage income of the self-employed from the tax base. One of them, KTGO, defines the tax base in terms of the gross operating surplus and is conceptually equivalent to KETG in (34), while the other, KTNO, is calculated on the basis of the net operating surplus and is comparable to KETN in (37). As shown in table 13, while correlation coefficients are relatively stable for labour and consumption rates, in the case of capital, similarities between AMECO and OECD very much depend on the period considered. When defining the tax base in terms of the gross operating surplus, AMECO and OECD lead to quite similar results in levels during the eighties. However, differences between both rates, KETG and KTGO, are larger during the nineties. If the tax base is calculated on the basis of the net operating surplus, the degree of similarity is slightly higher in the nineties than in the late eighties.

All in all, where across-country comparisons are concerned, table 13 seems to suggest that ECFIN and OECD effective tax rates present a rather high degree of similarity. This is particularly true in the case of labour and consumption taxes. Evidence for capital rates is more ambiguous, but leaving aside periods including large cyclical swings, such as 1990-1993, ECFIN and OECD capital rates lead to broadly equivalent conclusions when the tax base is calculated by using the gross operating surplus (KETG and KTGO).

Within-country correlations very much support such conclusions. Table 14 gives the correlation coefficients for the series expressed in annual growth rates (in %). Taking into account that correlations concern growth rates instead of levels, figures in the table can be assessed as overall high. However, the degree of similarity varies across countries and types of rates. Italy and, to a lesser extent, Germany (labour), Finland (capital with gross operating surplus) and Japan (consumption) are the countries where the discrepancies between ECFIN and OECD databanks are the largest. Moreover, it is worth highlighting that low or non-significant correlation coefficients are the exception rather than the rule. For most countries, ECFIN and OECD databanks provide comparable indicators. This suggests that differences between both



databanks might be attributable to differences in the input series rather than to differences in the criteria applied to calculate the tax rates.

**Table 14. Comparing AMECO and OECD. Time-series analyses in growth rates**

	LETR/ LTRO	CETR/ CT2O	KETG/ KTGO	KETN/ KTNO
B	0.737	0.786	0.633	0.727
D	0.535	0.715	0.514	0.814
E	0.744	0.886	0.829	0.821
F	0.948	0.904	0.733	0.909
IRL	0.935	0.936	0.701	0.796
I	0.685	0.517	0.663	0.788
NL	0.914	0.758	0.954	0.982
A	0.904	0.766	0.936	0.812
FIN	0.931	0.693	0.208	0.958
S	0.642	0.723	0.444	0.876
UK	0.563	0.883	0.905	0.952
US	0.852	0.734	0.730	0.724
JAP	0.875	0.086	0.854	0.881

## 10.2. Comparing AMECO and *EC2000*

*EC2000* (European Commission, 2000c) publishes the so-called implicit tax rates on employed labour, consumption and other production factors. *EC2000* publishes two alternative tax rates on employed labour, which diverge in the way the tax base is defined. The first one (LT1T hereafter) defines the tax base on the basis of the compensation of employees paid on the economic territory, while the second one (LT2T) calculates the tax base as the compensation of resident employees. As explained above, the major difference between ECFIN and *EC2000* rates on employed labour consists of the way the personal tax revenues from labour are calculated. Leaving aside this fact, the clearest counterpart to LT1T and LT2T in AMECO is LITR in (23), since the rates in *EC2000* classify the whole income of the self-employed as capital income.

The first two columns of table 15 give the cross-country correlations (rank correlations between brackets) for five-year average levels and long-run growth rates. The figures in the table seem to suggest that ECFIN and *EC2000* tax rates are broadly similar with correlation coefficients in levels at around 90%. Moreover, although classical correlations for growth rates are only 75%, rank correlations reveal that the ordering of countries is overall comparable in both databanks. In addition, it seems that LT1T and LT2T are, from a statistical point of view, the same indicators, since their correlations with LITR are almost identical.

The major difference between the implicit tax rate on consumption as calculated in European Commission (2000c) –CTRT- and its counterpart in AMECO –CITR in (28)- seems to be the definition of consumption taxes. *EC2000* excludes a number of (rather marginal) energy and ecological taxes, which are considered as taxes on other

production factors, while such taxes are treated by indirect taxes in the ECFIN databank. The third column of table 15 indicates that such differences in criteria have not a big overall impact in terms of levels. However, in terms of growth rates, the differences are striking.

**Table 15. Comparing AMECO and EC2000. Cross-country correlations**

	LITR/ LT1T	LITR/ LT2T	CITR/ CTRT	KITN/ KT1T	KITN/ KT2T
AV80-84	0.842 (0.836)	0.836 (0.846)	0.813 (0.814)	0.632 (0.664)	0.573 (0.636)
AV85-89	0.909 (0.854)	0.902 (0.857)	0.880 (0.835)	0.689 (0.657)	0.580 (0.604)
AV90-93	0.912 (0.890)	0.914 (0.886)	0.871 (0.818)	0.477 (0.353)	0.426 (0.346)
AV94-97	0.911 (0.807)	0.913 (0.811)	0.868 (0.753)	0.586 (0.475)	0.563 (0.418)
Growth 80-84/ 93-97	0.752 (0.900)	0.736 (0.907)	0.520 (0.539)	0.596 (0.653)	0.572 (0.700)

Finally, *EC2000* provides two alternative implicit tax rates on capital. The first one, KT1T, excludes interest paid by governments, while the second one, KT2T, includes such payments. In both rates, the tax base is calculated on the basis of the net operating surplus and, also in both cases, the whole income of the self-employed is considered as capital income. In addition, as mentioned in the paragraph above, the rates in *EC2000* are not exclusively rates on capital, but on “other production factors”. These include some energy and environmental taxes, which vary from one country to another and can be marginal in some cases. On the basis of the way the operating surplus is measured and the income of the self-employed is treated, KITN in (39) might be the best proxy to *EC2000* rates. The correlations exhibited in the last two columns of table 15, albeit positive and significant, are relatively low. We think that the major source of discrepancies may be the differences in the way personal income tax revenues from capital are calculated.

As shown in table 16, the divergences between both tax databanks seem to vary strongly from one Member State to another. If we establish 70% as a benchmark for the time series correlation coefficients of the series in growth rates, we have to conclude that very large divergences between *EC2000* and ECFIN databanks only appear in Greece, Luxembourg and the UK. In addition, the *EC2000* and ECFIN series of tax rates on labour are also quite different in Denmark, Portugal and Sweden, while in this latter country, as well as in Germany<sup>48</sup>, divergences also affect consumption tax rates. Yet, it is worth noting that leaving aside Greece and to a much

<sup>48</sup> Note that correlation coefficients for capital taxes in Germany are numerically lower than our 70% benchmark. However, at 68%, they are not statistically different from that benchmark.

lesser extent Luxembourg, the coefficients in table 16 are positive and statistically significant.

**Table 16. Comparing AMECO and EC2000. Time-series analyses in growth rates**

	LETR/ LT1T	LETR/ LT2T	CITR/ CTR1T	KITN/ KT1T	KITN/ KT2T
B	0.717	0.716	0.729	0.722	0.701
DK	0.500	0.472	0.928	0.940	0.888
D	0.725	0.717	0.532	0.680	0.682
GR	-0.051	-0.045	0.536	0.133	0.147
E	0.699	0.699	0.958	0.715	0.716
F	0.902	0.909	0.902	0.851	0.890
IRL	0.912	0.916	0.943	0.786	0.765
I	0.714	0.723	0.740	0.792	0.773
L	0.209	0.286	0.408	0.307	0.305
NL	0.861	0.862	0.931	0.850	0.799
A	0.834	0.843	0.813	0.818	0.827
P	0.525	0.515	0.753	0.825	0.845
FIN	0.890	0.891	0.836	0.868	0.875
S	0.655	0.661	0.540	0.868	0.870
UK	0.452	0.454	0.507	0.661	0.611

Overall, we can conclude that the differences in criteria and data sources between *EC2000* and ECFIN lead to lower than expected differences in the series of tax rates. This is particularly true in the case of the ordering of countries in terms of the tax burdens on labour and on consumption.

## 11. COMPARING EFFICIENCY AND GROWTH EFFECTS

The interest in producing aggregate tax rates may go beyond mechanical comparisons across countries and the assessments of the impact of tax reforms on tax burdens. For instance, the *Presidency Conclusions of the Lisbon European Council* requested the Council and the Commission to assess “*the contribution of public finances to growth and employment*”. In the framework of taxation, such a request implies determining the (distortionary) effects of the tax burden and its components on economic efficiency (investment, and employment) and growth. From an economic policy viewpoint, the issue at stake is the effectiveness of tax reform as an instrument to enhance long-run growth and job creation.

The academic literature is rich in papers and monographs with theoretical and empirical evidence on the impacts of taxes on growth and employment. Taxation affects the functioning of the economy in different ways. Taxes interfere with the

incentives to invest, save and work and have sizeable welfare effects<sup>49</sup>. Capital taxes reduce the after-tax rate of return on physical capital, thus lowering capital accumulation. Capital taxes may also create disincentives to save over the life-cycle. On the other hand, labour taxes, when coupled with rigid labour markets and generous benefit systems, increase the cost of labour, reduce employment and increase unemployment<sup>50</sup>. Therefore, tax systems may be a key factor to determine the overall efficiency of the economy.

However, such a body of literature is far from generating unanimity about the capacity of taxes to influence long-run growth in a significant way. Where growth effects are concerned, and although economic models predict that changes in tax rates affect growth in the long run<sup>51</sup>, as far back as in 1964, Harberger<sup>52</sup> conjectured that in practice tax policy is not effective in influencing growth. Since then, a debate exists in the empirical literature about the size and statistical significance of the effects of taxes on growth. All in all, while taxes and, particularly, capital taxes seem to have a sizeable and unambiguous negative effect on private investment, the effects on long-run growth, measured through the real GDP or the per capita GDP, may be statistically non-significant, or negative but small (Mendoza, Milesi-Ferretti and Asea, 1997). Moreover, it seems that estimates of such growth effects very much depend on the country sample and the period covered. They are also very sensitive to the inclusion or exclusion of other variables in the models, to the instruments used to avoid endogeneity biases, and to the estimation methods applied (see, for example, Agell, Lindh and Ohlsson, 1997, Folster and Henrekson, 1999, and Agell, Lindh and Ohlsson, 1999).

Where the effects of taxation on employment and unemployment are concerned, a body of economic literature argues that the tax burden on labour will be passed on to labour itself, at least in the long-run (see, for instance, Nickell, 1997). Such theoretical arguments have found support in a number of empirical analyses such as, for instance, Layard, Nickell and Jackman (1991) or, Nickell and Layard (1999), which found rather small negative effects of taxes on (un)employment performance. However, other empirical analysis, such as, Elmeskov et al (1999), Blanchard and Wolfers (1999) or Daveri and Tabellini (2000), which deal with the interplay of taxes with benefits and other labour and product market institutions, suggest that such negative effects may be sizeable. Moreover, simulation experiments on the basis of general equilibrium models published in *PFR2000* (see European Commission, 2000a) suggest that a reduction in the tax burden of 1% of GDP could increase employment by 0.5 to 1% in the long run (10 years) depending on the characteristics of the tax reform (across-the-board tax cuts, targeted to labour)<sup>53</sup>.

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<sup>49</sup> See, among many others, de la Fuente (1997), Mendoza *et al* (1997), Leibfritz, Thornton and Bibbee (1997) and Pissarides (1998).

<sup>50</sup> See, Nickell (1997), Daveri and Tabellini (2000), Elmeskov et al (1999) and Blanchard and Wolfers (1999).

<sup>51</sup> This particularly applies to endogenous growth models that take account of the whole structure of expenditures and taxes. For instance, Barro (1990) predicts that the impact of fiscal policy on growth depends on the structure of the budget. Kneller, Bleaney and Gemmell (1999) present very interesting empirical evidence in this line. They have shown that, once the government budget constraint is adequately specified, the effects of tax reform on long-run growth depend on how it is financed.

<sup>52</sup> See Harberger (1964).

<sup>53</sup> Where comparisons with results presented below are concerned, it is worth bearing in mind that such an accumulated impact on employment implies a very low additional annual growth rate of employment with respect to the baseline.

It is worth clarifying at the outset that the purpose of this section is not to contribute to the debate of the effects of taxes on economic efficiency and long-run growth. This is, for obvious reasons, beyond the scope of this paper. Within a much modest scope, this section only tries to see to what extent the estimated effects of taxes on investment, employment and long-run growth are sensitive to alternative criteria of calculating effective tax rates.

Table 17 shows the results of simple regressions between ECFIN tax rates, on the one hand, and the private investment rate, the employment rate, the unemployment rate and the real GDP growth rate for a panel data involving the 15 Member States, the US and Japan over the 1970-1997 period<sup>54</sup>.

**Table 17. Investment, growth and (un)employment effects. ECFIN tax rates, 1970-1997.**

	Investment rate		Growth rate		Employment rate		Unemployment rate	
	Coef. (t-ratio)	R <sup>2</sup>	Coef. (t-ratio)	R <sup>2</sup>	Coef. (t-ratio)	R <sup>2</sup>	Coef. (t-ratio)	R <sup>2</sup>
LETR	-0.13 (-4.95)*	<b>0.20</b>	-0.07 (-4.89)*	<b>0.19</b>	0.05 (0.52)	<b>0.00</b>	0.05 (1.17)	<b>0.01</b>
LITR	-0.12 (-4.05)*	<b>0.14</b>	-0.08 (-5.35)*	<b>0.22</b>	-0.09 (-0.98)	<b>0.01</b>	0.06 (0.06)	<b>0.02</b>
CETR	-0.06 (-1.57)	<b>0.02</b>	-0.02 (-1.03)	<b>0.01</b>				
CITR	-0.09 (-1.56)	<b>0.02</b>	-0.03 (-0.99)	<b>0.01</b>				
KETG	-0.24 (-5.82)*	<b>0.25</b>	-0.00 (-0.22)	<b>0.00</b>				
KETN	-0.05 (-3.23)*	<b>0.09</b>	-0.02 (-2.45)*	<b>0.06</b>				
KITG	-0.27 (-7.51)*	<b>0.36</b>	-0.05 (-1.83)	<b>0.03</b>				
KITN	-0.12 (-6.39)*	<b>0.29</b>	-0.03 (-2.81)*	<b>0.07</b>				

\* Significant at 5%

In order to capture long-run or trend effects, we have eliminated cyclical fluctuations by taking five-year averages over the period 1970-1994 (1970-1974, 1975-1979, 1980-1984, 1985-1989 and 1990-1994) plus the three-year averages for the period 1995-1997. The table only shows the estimate (and the t-ratio) of the coefficient of the tax rate in row in the regression of the indicator in column. The R<sup>2</sup> of the regression is displayed in bold. Econometric results in the table are very much in line with the literature mentioned above.

<sup>54</sup> We have stopped in 1997 to allow for comparisons with the *EC2000* and OECD databanks.

- *First*, labour and capital taxes negatively affect the private investment rate in the long run. However, consumption taxes seem to be rather neutral with respect to investment<sup>55</sup>. Leaving aside KETN, the explicative power of capital taxes is larger than that of labour taxes. All in all, an increase of 1 percentage point in capital tax rates may reduce the investment rate by a quarter of point. The same increase in labour taxes leads to half such a reduction in the investment rate (slightly more than a tenth of a percentage point).
- *Second*, taxes are overall negatively correlated with growth. However, their effects on growth are lower than those on investment. In the case of labour taxes, an increase of a percentage point in the effective tax rate on labour reduces growth in the long run by less than 0.1%. In the case of capital taxes, the effects on growth are negligible when compared with those on investment. In some cases, such effects are statistically non-significant<sup>56</sup>.
- *Finally*, and unsurprisingly, since our “models” do not take account of the interplay of labour taxes with benefits and other market institutions, there are no significant effects of taxes on the employment and the unemployment rates<sup>57</sup>. Overall, when excluding any other potential explicative variable, labour tax rates seem to be neutral with respect to employment performance.

There is a question now to ask whether such conclusions are supported by the tax rates calculated by the OECD or by *EC2000*. Table 18 compares the investment, growth and employment effects of changes in the tax rates in ECFIN and in *EC2000*.

**Table 18. Comparing investment, growth and (un)employment effects of ECFIN and EC2000 tax rates**

	Investment rate		Growth rate		Employment rate		Unemployment rate	
	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>
LITR	-0.09*	0.08	-0.08*	0.16	0.16	0.03	-0.03	0.00
LT1T	-0.09*	0.11	-0.05*	0.09	0.18	0.04	0.02	0.00
LT2T	-0.09*	0.12	-0.05*	0.07	0.22*	0.06	0.01	0.00
CITR	-0.08	0.02	0.00	0.00				
CTRT	-0.09	0.02	0.06	0.03				
KITN	-0.09*	0.23	-0.01	0.01				
KT1T	-0.06*	0.13	-0.02	0.04				
KT2T	-0.08*	0.11	-0.02	0.01				

\* Significant at 5%

<sup>55</sup> Mendoza et al (1997) also found zero correlation between consumption taxes and investment.

<sup>56</sup> See Kneller, Bleaney and Gemmell (1999) for an interpretation of this result, which would be due to absence of the government budget constraint in the model.

<sup>57</sup> Therefore, the results in this section are not comparable with simulations in, for instance, European Commission (2000a). Models in table 17 represent, by definition, partial analyses, while simulation experiments in “*Public Finances in EMU –2000*” give general equilibrium effects, which take account of the interplay of taxes with other key variables in the economy.

In particular, we compare effects of the two labour implicit tax rates published in European Commission (2000c) with their best counterpart in the ECFIN databank – LITR-. In the case of consumption, we compare the *EC2000* CTRT with CITR in (28). Finally, we compare the *EC2000* capital rates KT1T and KT2T with the ECFIN rate KITN as defined in (39). It is worth keeping in mind that regression results in table 18 may not be comparable with those in table 17; the reason being that the sample of countries and the periods are different in both sets of regressions. Since *EC2000* only includes the 15 Member States, samples in table 18 exclude the US and Japan. Moreover, unlikely in table 17, the period for some countries is 1980-1997 instead of 1970-1997. The main conclusions can be summarised as follows:

- *First*, where investment effects of taxation are concerned, both ECFIN and *EC2000* tax rates lead to almost exactly the same results. Overall, an increase of 1 percentage point in labour or capital tax rates would reduce the private investment rate by a (statistically significant) figure slightly lower than a tenth of a percentage point. However, ECFIN and *EC2000* consumption tax rates are neutral with respect to investment.
- *Second*, capital and consumption taxes seem to be neutral with respect to long-run growth. As in table 17, the effects of capital taxes on growth are negligible and, in any case, much lower than those on investment. In accordance with table 17, the effects of labour taxes on growth seem to be significant, although lower than those on investment. The explicative power of ECFIN's LITR is slightly higher than that of its counterparts in *EC2000*, LT1T and LT2T.
- *Finally*, leaving aside LT2T in the regression for the employment rate, which exhibits a (wrong) positive sign, likely due to specification errors, the effects of labour taxes on employment and unemployment are statistically insignificant.

Consequently, such results seem to suggest that when it comes to analyse growth and employment effects of taxation, ECFIN and *EC2000* databanks lead to comparable conclusions.

Table 19 is the equivalent to table 18 for the comparisons between ECFIN and OECD tax rates.

**Table 19. Comparing investment, growth and (un)employment effects of ECFIN and OECD tax rates**

	Investment rate		Growth Rate		Employment rate		Unemployment rate	
	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>	Coef.	R <sup>2</sup>
LETR	-0.05	0.04	-0.05*	0.11	0.07	0.00	-0.02	0.00
LTRO	-0.04	0.03	-0.04*	0.07	0.17	0.03	-0.04	0.01
CETR	-0.04	0.01	-0.01	0.00				
CT10	-0.06	0.02	0.01	0.00				
CT20	-0.05	0.03	0.00	0.00				
KETG	-0.11	0.05	0.05	0.03				
KTGO	-0.07	0.05	-0.02	0.01				
KETN	0.02	0.01	-0.02	0.03				
KTNO	0.00	0.00	-0.01	0.02				

\* Significant at 5%

Again, the results in table 19 are not comparable with those in tables 17 and 18. On the one hand, the country sample is different since Luxembourg is not included in it, but the US and Japan are in the sample. On the other hand, the time span only starts in 1980 and there are no data for some countries during the eighties.

Overall, results in the table indicate that ECFIN and OECD tax rates lead to the same type of efficiency and growth effects.

- No tax rate has significant effects on the investment rate. Yet, tax rates of capital, measured on the basis of the gross operating surplus, seem to have larger (and negative) effects than those calculated on the basis of the net operating surplus.
- Albeit rather small, labour taxes have negative effects on long-run growth. An increase of 1 percentage point in the effective tax rate reduce growth in the long run by only 0.05%. In the sample of table 19, consumption and capital taxes do not affect long-run growth.
- Finally, the employment and the unemployment rates are invariant with respect to the labour effective tax rates produced by both ECFIN and OECD.

## 12. CONCLUSIONS

This paper explains and discusses in detail the method and information sources used by DG ECFIN services to obtain the effective tax rates on labour, capital and consumption. The paper also compares the informative content of ECFIN indicators with that of tax rates calculated by the OECD and by European Commission's



*Structures of the taxation systems in the European Union.* Tax rates have been calculated for the 15 Member States, the US, Japan, EUR-11 and EU-15 between 1970 and 2001.

It has been explained that the goal of DG ECFIN in working on this databank on effective taxation is to supplement the information in other databanks (*EC2000*, OECD), which are published with a 2 to 3-year lags, and/or only include too broad indicators of the tax burdens, and/or do not allow for comparisons between EU and non-EU countries. The goal of the ECFIN databank on effective taxation is to carry out early, transparent and detailed assessments of tax reforms in Member States, as requested in the conclusions of the Council of Lisbon. Such assessments can be conducted by adapting effective tax methods to the information available in AMECO.

This paper has shown that applying alternative criteria to the same input data does not make much of a difference. It has also been shown that the OECD and ECFIN methods result in quite comparable sets of indicators. However, in some cases the divergences with *EC2000* may be significant, especially in the case of capital/“other production factors” taxes. Differences in the ECFIN-versus-OECD case arise because of using different input data, rather than because of applying different criteria. Where divergences between ECFIN and *EC2000* are concerned, the reasons have to be found on significant differences in the criteria. Yet, as a general rule, we can conclude that leaving aside capital taxes, divergences between the labour and consumption rates produced in the three databanks analysed here -ECFIN, OECD and *EC2000*- are either negligible or relatively small and, in any case, much smaller than *a priori* expected.

Such similarities apply to a wide range of statistical properties of the tax rates. These include across-country relative levels of the tax burdens, their changes, as well as the relative position of countries in orderings obtained on the basis of tax rates. They also include within-country comparisons on the basis of time series analyses, where the series of tax rates are expressed in growth rates. Finally, comparisons of the relationships between tax rates and investment, growth and (un)employment performance also suggest that ECFIN rates reproduce the same effects that those of the OECD and European Commission.

Given this, we think that the approximation proposed by DG ECFIN may be, at least, a good complement for a common set of indicators of effective taxation transparent, replicable, and comparable internationally.

## References

Agell, J.; T. Lindh; and H. Ohlsson, 1997, Growth and the public sector: A critical review essay, *European Journal of Political Economy*, 13, 33-52.

Agell, J.; T. Lindh; and H. Ohlsson, 1999, Growth and the public sector: A replay, *European Journal of Political Economy*, 15, 359-366.

Barro, R. J., 1990, Government spending in a simple model of endogenous growth, *Journal of Political Economy*, 98, 103-125.

Blanchard, O., and J. Wolfers, 1999, *The role of shocks and institutions in the rise of European unemployment: The aggregate evidence*, NBER Working papers, No 7282.

Carey, D. and H. Tchilinguirian, 2000, *Average effective tax rates on capital, labour and consumption*. Paris: OECD.

Daveri, F., and G. Tabellini, 2000, Unemployment and taxes. Do taxes affect the rate of unemployment?, *Economic Policy*, 30, 47-104.

De la Fuente, A., 1997, *Fiscal policy and growth in the OECD*, CEPR Discussion Paper, No. 1755.

Dreze, J. H. and H. Sneessens, 1996, Technological development, competition from low-wage economies and low-skilled unemployment, *Swedish Economic Policy Review*, 1, 185-214.

Elmeskov, J., J. P. Martin, and S. Scarpetta, 1998, Key lessons for labour market reforms: evidence from OECD countries' experiences, *Swedish Economic Policy Review*, 5, 205-252.

European Commission, 1997, *Effective taxation and tax convergence in the EU and the OECD*. Note to the EPC II/603/97-EN/Rev.2.

European Commission, 2000a, *Public Finances in EMU –2000*, ECFIN/339/00-EN. Forthcoming in *European Economy Reports and Studies*.

European Commission, 2000b, *Commission Recommendation for the 2000 Broad Guidelines of the Economic Policies of the Member States and the Community*, COM(2000)214 final.

European Commission, 2000c, *Structures of the taxation systems in the European Union, 1970-1997*. Luxembourg: OOPEC.

European Commission, 2000d, *Report from the Commission on the implementation of the 1999 Broad Economic Policy Guidelines*, COM(2000)143 final.

Fiorito, R. and F. Padrini, 2000, Distortionary taxation and labour market performance, *Oxford Bulletin of Economics and Statistics*, forthcoming.

Folster, S., and M. Henrekson, 1999, Growth and the public sector: a critique of the critics, *European Journal of Political Economy*, 15, 337-358.

Gordon, K., and H. Tchilinguirian, 1998, *Effective average tax rates on capital, labour and consumption goods: Cross country estimates*. DAFFE/CFA/WP2/RD(98)14. Paris: OECD.

Hamermesh, D. S., 1993, *Labour Demand*. Princeton: Princeton University Press.

Harberger, A. C., 1964, The measurement of waste, *American Economic Review*, 54, 58-76.

Kneller, R., M. F. Bleaney, and N. Gemmell, 1999, Fiscal policy and growth: evidence from OECD countries, *Journal of Public Economics*, 74, 171-190.

Layard, R., S. Nickell and R. Jackman, 1991, *Unemployment. Macroeconomic Performance and the Labour Market*. New York: OUP.

Liebfriz, W., J. Thornton, and A. Bibbee, 1997, *Taxation and economic performance*. OECD Economics Department Working Papers No 176. Paris: OECD.

Lucas Jr., R. E., 1990, Supply-side economics: An analytical review. *Oxford Economic Papers* 42, 293-316.

Martinez-Mongay, C., 1998, *On effective taxation*. DAFFE/CFA/WP2/RD(98)17. Paris: OECD.

Martinez-Mongay, C., 1999, *Effective tax rates based on AMECO data. Updating of December 1999*, internal note DG II/08787 of 03.12.99.

Martinez-Mongay, C., and R. Fernandez-Bayon, 1999, *Effective taxation in the EU. Effective tax rates based on AMECO data*, II/508/99/EN.

Mendoza, E. G., A. Razin, and L. Tesar, 1994, Effective tax rates in macroeconomics. Cross-country estimates of tax rates on factor incomes and consumption. *Journal of Monetary Economics*, 34, 297-233.

Mendoza, E. G., G. M. Milesi-Ferretti, and P. Asea, 1997, On the effectiveness of tax policy in altering long-run growth: Harberger's superneutrality conjecture, *Journal of Public Economics*, 66, 99-125.

Nickell, S., 1997, Unemployment and labour market rigidities: Europe versus North America, *Journal of Economic Perspectives*, 11, 55-74.

Nickell, S., and R. Layard, 1999, Labour market institutions and economic performance, in O. Ashenfelter and D. Card (eds.): *Handbook of Labour Economics*, Vol 3, Amsterdam: North Holland.

Pissarides, C. A., 1998, The impact of employment tax cuts on unemployment and wages. The role of unemployment benefits and tax structure, *European Economic review*, 42, 155-183.

Volkerink, B., and J. de Haan, 1999, *Tax Ratios: A critical Survey*. DAFFE/CFA/WP2(99)4/REV1. Paris: OECD.

## APPENDIX A. I. STATISTICAL SOURCES

### Series from OECD (Revenue Statistics -OECDRS)<sup>58</sup>

**PROP** Taxes on property. National currency, current prices. OECD Classification: item 4000.

**SSCEM** Social security contributions paid by the employees. National currency, current prices. OECD Classification: item 2100.

**SSCER** Social security contributions paid by the employers. National currency, current prices. OECD Classification: item 2200.

**SSCOT** Other social security contributions (non-allocable between 2100, 2200, 2300). National currency, current prices. OECD Classification: item 2400.

**SSCSE** Social security contributions paid by the self-employed. National currency, current prices. OECD Classification: item 2300.

**TPRWF** Taxes on payroll and workforce. National currency, current prices. OECD Classification: item 3000.

**TRCI** Corporate tax revenues from income, profits and capital gains. National currency, current prices. OECD Classification: item 1200.

**TRII** Tax revenues from income, profits and capital gains of individuals. National currency, current prices. OECD Classification: item 1100.

### Input series from AMECO<sup>59</sup>

**CEGG** Compensation of employees; general government. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UWCG-ESA95/1 0 310 0 UWCGF-Old definition.

**COEL** Compensation of employees; total economy. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UWCD.

**DTRV** Taxes on income and wealth (Direct taxes); general government. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UTYG-ESA95/1 0 310 0 UTYGF-Old definition.

**EMPL** Employees, persons; total economy (National accounts). 1000 persons. AMECO Code: 1 0 0 0 NWTD.

**GDPN** Nominal Gross Domestic Product at market prices. Common currency, Mrd. current euro. AMECO Code: 1 0 92 0 UVGD

**GFC** Final consumption expenditure of general government at current prices. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UCTG.

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<sup>58</sup> In alphabetical order.

<sup>59</sup> In alphabetical order.

**GOS** Gross operating surplus; total economy. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UOGD.

**INRV** Taxes linked to imports and production (Indirect taxes); general government. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UTVG-ESA95/1 0 310 0 UTVGF-Old definition.

**NOS** Net operating surplus. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UOND.

**NWRV** Social contributions received; general government. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UTSG-ESA95/1 0 310 0 UTSGF-Old definition.

**OCCP** Employment, persons; total economy (National accounts). 1000 persons. AMECO Code: 1 0 0 0 NETD.

**PFC** Private final consumption expenditure at current prices. % of GDP (gross domestic product at market prices). AMECO Code: 1 0 310 0 UCPH.

## APPENDIX A. II. TRANSFORMED SERIES

**CETR** The consumption effective tax rate (in % of the pre-tax value of final consumption). It is defined in expression (25) [ $CETR=INRV/(PFC+GFC-CEGG-INRV)$ ]. The complete series can be found in table BI.7 of appendix B.I.

**CITR** The consumption “implicit” tax rate (in % of the post-tax value of final consumption). It is defined in expression (28) [ $CETR=INRV/(PFC+GFC-CEGG)$ ]. The complete series can be found in table BI.8 of appendix B.I.

**CORV** Corporate income tax revenues in % of GDP. It is defined in expression (17) [ $CORV=DTRV*TRCIR$ ]. The complete series can be found in table BII.13 of appendix B.II.

**ELRV** Non-wage labour costs (in % of GDP) attributable to employed labour. It is defined in expression (8) [ $ELRV=NWRV*SELR$ ]. The complete series can be found in table BII.7 of appendix B.II.

**ERRV** SSC paid by the employers (in % of GDP). It is defined in expression (11) [ $ERRV=NWRV*SERR$ ]. The complete series can be found in table BII.8 of appendix B.II.

**GOSA** Gross operating surplus adjusted for the wage income of the self-employed (% of GDP). It is defined in expression (35) [ $GOSA=GOS-(LETB-COEL)$ ].

**KETG** Capital effective tax rate in % of the gross operating surplus excluding the wage income of the self-employed (GOSA). It is defined in expression (34) [ $KETG=(CORV+PWRV+PITR*(NOSA-CORV-PWRV))/GOSA$ ]. The complete series can be found in table BI.11 of appendix B.I.

**KETN** Capital effective tax rate in % of the net operating surplus excluding the wage income of the self-employed (NOSA). It is defined in expression (37) [ $KETN=(CORV+PWRV+PITR*(NOSA-CORV-PWRV))/NOSA$ ]. The complete series can be found in table BI.12 of appendix B.I.

**KITG** Capital “implicit” tax rate in % of the gross operating surplus including the wage income of the self-employed (GOS). It is defined in expression (38) [ $KITG=(CORV+PWRV+(NWRV-ELRV)+PITR*(NOS-(NWRV-ELRV)-CORV-PWRV))/GOS$ ]. The complete series can be found in table BI.13 of appendix B.I.

**KITN** Capital “implicit” tax rate in % of the net operating surplus including the wage income of the self-employed (NOS). It is defined in expression (39) [ $KITN=(CORV+PWRV+(NWRV-ELRV)+PITR*(NOS-(NWRV-ELRV)-CORV-PWRV))/NOS$ ]. The complete series can be found in table BI.14 of appendix B.I.

**LETB** Labour effective tax base (in % of GDP). It is defined in expression (5) [ $LETB = COEL*OCCP/EMPL$ ].

**LETR** Labour effective tax rate (in % of total labour costs). It is defined in expression (22) [ $LETR=(NWRV+PITR*(LETB-NWRV))/LETB$ ]. The complete series can be found in table BI.5 of appendix B.I.

**LITR** The effective tax rate of employed labour (in % of the compensation of employees). It is defined in expression (23) [ $LITR=(ELRV+PITR*(LITB-ELRV))/LITB$ ]. The complete series can be found in table BI.6 of appendix B.I.

**NOSA** Net operating surplus adjusted for the wage income of the self-employed (% of GDP). It is defined in expression (36) [ $NOSA=NOS-(LETB-COEL)$ ]

**NWEL** Non-wage labour costs effective rate on employed labour (% of compensation of employees). It is defined in expression (9) [ $NWEL=ELRV/COEL$ ]. The complete series can be found in table BI.2 of appendix B.I.

**NWER** Effective rate of non-wage labour costs paid by the employers (% of compensation of employees). It is defined in expression (12) [ $NWER=ERRV/COEL$ ]. The complete series can be found in table BI.3 of appendix B.I.

**NWLC** Non-wage labour costs effective rate on total employment (% of total labour costs). It is defined in expression (6) [ $NWLC=NWRV/LETB$ ]. The complete series can be found in table BI.1 of appendix B.I.

**PIRV** Personal income tax revenues in % of GDP. It is defined in expression (16) [ $PIRV=DTRV*TRIIR$ ]. The complete series can be found in table BII.12 of appendix B.II.

**PITB** Personal income tax base in % of GDP. It is defined in expressions (19) and (20) [ $PITB=COEL+NOS-NWRV-CORV-PWRV$ ].

**PITR** Personal income tax rate (% of personal income). It is defined in expression (21) [ $PITR=PIRV/PITB$ ]. The complete series can be found in table BI.4 of appendix B.I.

**PROPR** Tax revenues from taxes on property in percentage of total direct taxes (OECDRS). The series is defined in expression (15) [ $TRIIR=PROP/(TRII+TRCI+PROP)$ ]. The complete series can be found in table BII.11 of appendix B.II.

**PWRV** Property tax revenues in % of GDP. It is defined in expression (18) [ $PWRV=DTRV*PROPR$ ]. The complete series can be found in table BII.14 of appendix B.II.

**SELR** Non-wage labour costs of employed labour as percentage of total non-wage labour costs (OECDRS). The series is defined in expression (7)

$[SELR=(SSCER+SSCEM+TPRWF)/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.6 of appendix B.II.

**SEMR** SSC paid by the employees as percentage of total non-wage labour costs (OECDRS).  $[SEMR=SSCEM/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.2 of appendix B.II.

**SERR** SSC paid by the employers as percentage of total non-wage labour costs (OECDRS). The series is defined in expression (10)  $[SERR=SSCER/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.1 of appendix B.II.

**SOTR** Other SSC as percentage of total non-wage labour costs (OECDRS).  $[SOTR=SSCOT/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.4 of appendix B.II.

**SSER** SSC paid by the self-employed as percentage of total non-wage labour costs (OECDRS).  $[SSER=SSCSE/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.3 of appendix B.II.

**TRCIR** Tax revenues from corporate income taxes in percentage of total direct taxes (OECDRS). The series is defined in expression (14)  $[TRCIR=TRCI/(TRII+TRCI+PROP)]$ . The complete series can be found in table BII.10 of appendix B.II.

**TRIIR** Tax revenues from personal income taxes in percentage of total direct taxes (OECDRS). The series is defined in expression (13)  $[TRIIR=TRII/(TRII+TRCI+PROP)]$ . The complete series can be found in table BII.9 of appendix B.II.

**TWEL** The tax wedge on employed labour in % of the producer wage of the employees. It is defined in expression (37)  $[TWEL=1-(1-NWEL)(1-PITR)(1-CITR)]$ . The complete series can be found in table BI.10 of appendix B.I.

**TWFR** Taxes on payroll and workforce as percentage of total non-wage labour costs (OECDRS).  $[TWFR=TPRWF/(SSCER+SSCEM+SSCSE+SSCOT+TPRWF)]$ . The complete series can be found in table BII.5 of appendix B.II.

**WEDG** The total tax wedge on labour (in % of the real producer wage). It is defined in expression (36)  $[WEDG=1-(1-NWLC)(1-PITR)(1-CITR)]$ . The complete series can be found in table BI.9 of appendix B.I.

## **APPENDIX B I**

### **DETAILED TABLES FOR EFFECTIVE TAX RATES**



**Table BI. 1. NON-WAGE LABOUR COSTS ON TOTAL EMPLOYMENT**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	18.3	3.4	19.4	11.4	10.5	21.9	4.8	17.6	16.5	18.3	17.6	6.6	9.0	14.5	9.6	6.9	6.6	18.5	16.4
1971	18.6	3.4	20.0	11.7	11.5	22.2	5.0	17.6	16.3	19.0	17.8	7.0	9.4	15.3	9.4	7.1	6.7	18.9	16.8
1972	18.7	3.5	20.9	12.0	11.8	22.7	5.4	17.7	16.4	19.4	18.0	7.5	9.4	16.2	9.9	7.4	6.8	19.4	17.3
1973	19.0	2.4	21.9	12.0	11.9	22.8	5.6	17.8	16.9	20.8	18.2	8.1	10.1	15.9	10.0	8.5	6.6	19.9	17.9
1974	19.1	2.0	22.3	12.3	12.1	22.9	6.8	17.9	17.1	21.6	18.6	7.4	10.6	15.8	10.7	8.7	6.9	20.0	18.1
1975	20.0	2.1	23.9	12.7	13.4	24.1	8.0	18.2	18.2	21.6	19.0	8.5	15.4	16.4	11.3	8.6	8.3	21.2	19.1
1976	19.7	2.0	25.1	13.3	14.0	24.9	8.7	18.6	19.9	21.8	19.3	8.4	16.3	19.6	12.1	8.8	8.3	22.0	20.0
1977	19.9	2.2	25.1	13.6	15.2	25.7	8.8	18.2	19.8	21.7	20.0	8.9	17.5	21.3	12.3	8.8	8.9	22.3	20.4
1978	19.8	2.2	25.1	13.8	16.1	26.1	8.7	18.4	19.8	22.1	20.5	9.1	16.6	22.6	11.5	9.1	9.0	22.5	20.5
1979	19.9	2.2	25.2	13.8	16.7	27.5	8.5	19.1	19.6	22.8	20.9	9.2	16.7	22.9	11.2	9.4	9.6	23.1	20.8
1980	19.8	2.5	25.1	14.7	17.2	28.2	9.0	19.6	20.0	23.3	21.5	9.5	17.0	23.8	11.4	9.3	9.9	23.4	21.0
1981	20.4	2.8	25.9	14.1	17.5	28.1	9.3	19.2	20.1	24.6	21.3	9.9	17.0	24.5	12.1	9.8	10.6	23.5	21.1
1982	21.2	3.3	26.6	15.6	17.8	28.9	10.9	20.5	20.3	26.1	21.5	10.9	16.5	24.4	12.7	10.0	10.9	24.3	21.9
1983	22.3	4.0	26.6	16.0	18.4	29.9	11.1	20.9	20.1	29.8	21.8	11.4	16.2	24.8	13.4	10.2	11.0	25.0	22.6
1984	23.5	4.1	26.9	17.0	18.4	31.0	11.4	20.8	20.6	29.6	22.1	11.7	16.6	24.6	13.3	10.4	11.3	25.3	22.8
1985	24.5	4.1	27.4	16.9	18.9	31.5	11.6	20.8	20.4	29.6	22.5	11.3	17.8	24.1	13.2	10.6	11.8	25.7	23.0
1986	25.0	3.7	27.3	17.4	19.3	32.0	11.4	21.9	20.3	28.0	22.5	13.6	17.8	24.4	13.2	10.9	12.0	26.0	23.5
1987	25.8	4.2	27.3	17.9	19.3	32.7	11.3	21.9	20.3	28.6	22.5	13.9	17.9	23.7	12.7	10.8	12.4	26.2	23.6
1988	25.7	3.5	27.6	16.9	19.0	33.1	11.6	22.0	21.3	29.0	22.8	13.8	18.4	24.2	12.5	11.1	12.5	26.3	23.5
1989	25.9	3.6	27.5	16.9	19.8	33.9	11.7	22.6	21.9	27.5	22.9	13.8	18.6	25.5	11.9	11.3	12.4	26.5	23.6
1990	25.4	3.8	27.4	17.5	19.9	33.8	11.8	22.8	21.2	25.0	22.7	14.0	20.3	25.7	11.3	11.2	13.6	26.3	23.5
1991	25.8	3.8	27.8	18.5	20.1	33.9	12.2	23.2	21.1	26.3	22.7	13.9	20.5	25.8	11.5	11.5	13.4	26.6	23.9
1992	25.9	4.0	28.0	18.7	21.3	34.2	12.3	23.8	21.7	26.6	23.5	14.3	22.4	24.9	11.6	11.6	13.8	27.1	24.4
1993	26.5	4.1	29.0	20.5	21.7	34.4	12.4	25.0	22.1	26.6	24.3	15.5	24.8	24.5	11.7	11.6	14.1	28.0	25.2
1994	26.5	4.8	30.2	21.0	22.0	34.7	12.3	24.8	21.7	28.0	25.4	15.7	27.0	25.1	11.9	11.7	14.1	28.7	25.7
1995	26.2	4.5	30.5	21.1	21.2	34.8	11.9	25.4	21.6	28.3	25.7	16.1	26.1	26.4	12.1	11.8	15.2	28.9	26.0
1996	26.4	4.5	31.6	22.0	21.6	35.2	11.4	25.8	21.3	27.4	26.4	16.7	25.0	27.1	12.1	11.7	15.3	29.3	26.3
1997	26.7	4.5	32.5	21.9	21.7	34.6	11.3	26.5	21.4	27.6	26.7	17.0	24.1	27.0	12.1	11.6	15.5	29.5	26.0
1998	26.6	4.5	32.2	22.0	21.7	31.4	11.3	23.3	21.4	27.4	26.5	17.7	23.9	26.9	12.3	11.5	16.0	28.1	24.9
1999	26.5	5.7	31.8	22.9	21.9	32.1	12.2	23.0	20.9	28.4	26.2	19.9	23.6	25.4	12.0	11.6	16.5	28.1	24.8
2000	25.9	6.1	31.5	23.2	21.9	31.8	11.3	23.0	21.0	28.1	26.2	20.3	23.3	28.0	11.9	11.4	17.1	27.9	24.4
2001	25.5	6.1	31.1	23.5	21.9	31.9	11.2	23.1	20.9	25.0	26.2	20.5	23.4	28.4	11.9	11.3	17.4	27.5	24.2

**Table BI.2. NON-WAGE LABOUR COSTS ON EMPLOYED LABOUR –NWLC-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	21.1	4.1	22.8	23.1	15.1	25.6	6.8	23.9	19.3	20.3	23.5	9.9	11.4	14.6	10.2	7.1	8.9	22.5	19.8
1971	21.3	4.0	23.3	23.0	16.3	25.7	7.0	23.7	19.1	21.0	23.4	10.3	11.8	15.7	10.0	7.5	8.8	22.8	20.0
1972	21.2	4.2	24.2	23.3	16.3	26.1	7.4	23.4	19.0	21.3	23.3	11.1	11.6	16.7	10.5	7.8	8.9	23.1	20.5
1973	21.4	2.8	25.1	23.0	16.3	26.1	7.7	23.6	19.5	22.9	23.2	11.9	12.3	16.5	10.6	8.9	8.5	23.6	21.0
1974	21.4	2.3	25.4	23.2	16.3	26.2	9.2	23.7	19.5	23.5	23.4	10.7	12.7	16.2	11.3	9.1	8.8	23.6	21.2
1975	22.2	2.5	27.1	23.0	17.8	27.5	10.8	24.2	20.4	23.2	23.9	12.3	18.9	16.6	12.0	9.0	10.4	24.9	22.3
1976	21.9	2.3	28.4	23.8	18.5	28.2	11.7	23.5	22.1	23.4	24.1	12.3	19.9	20.0	13.0	9.2	10.3	25.5	23.1
1977	22.1	2.5	28.2	24.2	19.9	28.9	11.8	23.0	21.9	23.0	24.7	13.3	21.2	21.8	13.2	9.2	10.8	25.7	23.4
1978	21.7	2.5	28.1	24.8	21.1	29.1	11.5	23.3	21.8	23.3	25.0	13.4	20.1	23.0	12.3	9.5	10.9	25.9	23.5
1979	21.9	2.5	28.1	24.8	22.0	30.4	11.1	20.4	21.5	23.9	25.4	13.4	20.1	23.3	12.1	9.8	11.5	25.9	23.3
1980	21.8	2.8	27.9	26.2	22.7	31.2	11.5	24.6	21.9	24.4	26.0	13.6	19.6	24.4	12.4	9.7	11.6	26.7	23.9
1981	22.3	3.2	28.7	25.8	23.1	30.9	11.8	24.3	21.8	25.4	25.9	14.1	19.2	25.1	13.2	10.4	12.3	26.9	24.1
1982	23.3	3.8	29.6	27.0	23.5	31.6	13.9	25.5	20.4	26.6	26.1	15.1	18.8	25.0	13.9	10.5	12.5	27.7	24.8
1983	24.7	4.5	29.3	27.9	22.9	32.6	14.4	26.5	19.7	29.7	26.4	15.6	18.4	25.4	14.7	10.8	12.5	28.3	25.5
1984	26.3	4.6	29.3	30.1	22.7	33.7	14.7	26.3	20.2	29.1	26.7	16.1	18.9	25.0	14.7	11.0	12.7	28.5	25.7
1985	27.2	4.6	29.4	29.7	23.2	34.1	14.9	26.2	19.9	29.9	27.1	15.8	20.1	24.4	14.7	11.1	13.1	28.8	25.8
1986	27.9	4.1	29.2	30.7	22.1	34.5	14.5	27.5	19.8	28.5	27.0	18.6	19.9	24.8	15.1	11.4	13.5	28.9	26.2
1987	29.0	4.6	29.0	31.9	22.0	35.1	14.4	27.3	19.6	28.4	26.9	19.1	19.8	24.0	14.3	11.2	13.9	29.0	26.2
1988	28.7	3.9	29.2	30.0	21.7	35.4	14.7	27.6	20.5	28.4	27.2	18.8	20.4	24.5	14.1	11.5	13.9	29.1	26.0
1989	29.2	3.9	29.1	29.8	21.9	36.0	14.5	28.5	21.1	27.1	27.3	18.7	20.5	25.6	13.5	11.6	13.8	29.2	26.1
1990	29.0	4.1	28.8	33.2	21.8	35.9	14.7	28.6	20.4	24.1	27.0	19.1	22.1	25.8	12.8	11.5	15.2	29.0	26.0
1991	29.3	4.2	29.2	34.6	21.7	35.7	14.9	28.8	20.2	25.3	26.9	19.0	22.4	26.2	13.0	11.7	14.9	29.1	26.3
1992	29.2	4.4	29.5	35.3	23.0	36.2	15.1	29.3	20.7	25.7	27.7	19.5	24.5	25.6	13.0	11.8	15.2	29.6	26.8
1993	30.0	4.6	30.4	38.4	23.1	36.4	15.1	29.8	20.9	25.4	28.6	20.9	27.3	25.3	13.1	12.0	15.3	30.3	27.4
1994	29.9	5.3	31.8	39.1	23.4	36.6	14.8	29.7	20.3	26.4	29.7	21.1	29.9	26.0	13.4	12.1	15.2	31.0	28.0
1995	29.5	4.9	32.0	39.0	22.4	36.6	14.2	30.2	20.2	26.7	30.0	21.6	28.7	27.4	13.6	12.1	16.4	31.0	28.2
1996	29.6	4.9	33.0	40.4	23.0	36.8	13.4	31.5	20.0	26.2	30.6	22.2	27.4	28.3	13.5	12.1	16.4	31.6	28.6
1997	29.9	4.9	34.1	40.1	22.9	36.1	13.1	32.5	20.1	26.2	30.6	22.4	26.5	28.1	13.4	11.9	16.7	31.9	28.4
1998	29.6	4.9	33.8	40.0	22.4	33.2	13.2	29.2	20.0	25.3	30.2	23.2	25.9	28.1	13.6	11.7	17.1	30.4	27.2
1999	29.5	6.1	33.4	41.0	22.5	33.7	14.2	28.6	19.5	26.0	29.9	25.8	25.5	26.5	13.2	11.8	17.6	30.3	27.0
2000	28.7	6.5	33.1	40.7	22.2	33.2	13.2	28.6	19.5	25.7	29.9	26.3	25.3	29.2	13.1	11.6	18.1	30.0	26.5
2001	28.3	6.6	32.7	40.5	22.0	33.1	13.1	28.6	19.4	22.8	29.8	26.5	25.4	29.6	13.1	11.5	18.3	29.6	26.2

**Table BI.3. NON-WAGE LABOUR COSTS PAID BY THE EMPLOYERS –NWEL-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	14.5	1.0	12.1	10.6	12.1	19.6	3.7	19.3	10.7	10.6	9.0	5.9	7.1	11.6	4.1	3.9	5.1	15.0	12.8
1971	14.8	0.9	12.3	10.7	12.8	19.6	3.6	19.1	10.6	10.9	9.0	6.1	9.3	11.9	4.5	4.1	5.1	15.1	12.9
1972	14.9	1.1	12.8	11.0	12.9	19.6	3.7	18.9	10.5	10.8	8.9	6.7	9.4	12.5	5.0	4.3	5.1	15.2	13.2
1973	14.9	1.3	13.4	11.0	13.0	19.3	4.2	19.0	10.8	11.9	8.8	7.2	10.4	11.0	5.8	5.0	4.9	15.4	13.5
1974	14.9	1.4	13.6	11.1	13.1	19.4	5.3	19.1	10.9	12.3	9.1	6.4	10.6	11.1	6.6	5.1	5.1	15.5	13.7
1975	15.4	1.3	14.6	11.1	14.4	20.2	6.5	19.4	11.6	12.0	9.8	7.0	15.8	13.4	7.4	5.0	6.1	16.4	14.6
1976	15.2	1.1	15.3	11.6	15.1	20.4	7.2	19.5	12.5	12.1	9.8	6.9	16.4	16.5	8.0	5.1	6.0	16.7	15.1
1977	15.3	1.1	15.1	12.1	16.0	20.8	7.3	19.0	12.4	12.0	10.2	7.6	17.8	17.9	7.5	5.2	6.3	16.7	15.2
1978	15.2	1.0	15.1	12.5	16.9	20.7	7.3	19.2	12.3	12.0	10.9	7.7	16.8	20.4	6.6	5.5	6.4	16.8	15.2
1979	15.2	0.9	15.1	12.0	17.6	21.1	7.2	16.2	12.1	12.4	11.1	7.7	18.4	21.3	6.0	5.6	6.7	16.6	14.9
1980	15.1	1.1	15.2	12.3	17.6	21.3	7.5	19.4	12.5	13.0	11.4	7.6	19.3	22.2	6.1	5.5	6.9	17.3	15.4
1981	14.9	1.6	15.7	12.1	18.3	21.2	7.8	19.1	12.2	13.2	11.7	8.0	19.1	23.0	6.2	5.8	7.3	17.5	15.5
1982	14.6	1.8	16.2	12.5	18.0	21.5	8.5	19.7	11.3	13.2	11.8	8.5	18.7	22.9	6.2	5.8	7.4	17.8	15.7
1983	15.2	2.2	16.0	12.9	18.0	22.0	8.0	20.3	10.8	14.1	12.0	8.6	18.3	21.9	7.2	6.1	7.4	18.1	16.0
1984	16.3	2.1	16.0	14.0	18.5	22.3	8.0	20.1	11.3	14.0	12.3	8.6	18.5	21.3	7.7	6.3	7.5	18.2	16.3
1985	17.6	1.8	16.0	13.8	18.8	22.9	8.2	20.2	11.1	14.1	12.4	8.5	19.4	21.0	7.7	6.3	7.7	18.5	16.4
1986	18.4	1.4	15.8	14.0	17.7	22.9	8.3	21.2	11.0	13.9	12.2	12.7	19.9	21.2	7.9	6.3	7.9	18.6	16.7
1987	19.1	1.9	15.8	14.9	17.9	23.0	8.4	21.0	11.1	13.5	12.1	12.5	19.7	20.6	7.7	6.3	8.2	18.6	16.7
1988	19.2	0.8	15.8	14.4	17.7	23.2	8.2	21.1	11.6	13.3	12.3	12.0	20.3	22.0	7.7	6.3	8.2	18.7	16.7
1989	19.3	0.7	15.7	15.5	17.9	23.2	8.3	22.0	11.9	12.5	12.3	11.7	20.4	23.2	7.7	6.4	8.2	18.9	16.9
1990	19.8	0.8	15.6	16.2	17.8	23.1	8.5	22.3	11.4	5.9	12.1	11.9	22.1	23.5	7.7	6.3	8.8	18.5	16.7
1991	20.3	0.7	15.8	17.0	17.7	23.0	8.7	22.2	11.2	6.1	12.1	11.7	22.3	23.3	7.9	6.4	8.6	18.4	16.7
1992	20.1	0.7	15.8	17.3	18.9	23.3	8.6	22.5	11.5	6.0	12.5	12.0	24.5	23.0	7.9	6.5	8.7	18.6	16.9
1993	20.3	0.7	16.4	18.6	18.5	23.2	8.5	22.4	11.6	5.8	12.9	12.9	24.4	23.1	8.0	6.6	8.8	18.6	16.9
1994	20.2	0.9	17.2	18.6	18.7	23.1	8.3	22.3	11.0	4.8	13.0	12.7	25.3	23.0	7.7	6.7	8.7	18.7	17.0
1995	19.9	0.9	17.3	18.3	18.0	22.9	8.5	22.7	10.8	5.4	13.4	13.0	24.0	22.2	7.7	6.6	9.3	18.7	17.0
1996	19.8	0.9	17.7	18.9	18.5	22.8	7.9	24.4	10.6	5.4	13.7	13.3	22.7	22.2	7.7	6.6	9.3	19.2	17.4
1997	20.1	0.9	18.3	17.9	18.6	22.8	8.1	25.2	10.5	5.0	13.8	13.5	21.8	20.9	7.5	6.5	9.4	19.6	17.3
1998	19.9	0.8	18.0	17.8	18.0	22.5	7.7	22.9	10.1	5.8	13.4	13.6	21.1	19.1	7.4	6.4	9.7	18.9	16.6
1999	19.8	1.1	17.8	18.2	18.0	22.9	8.3	22.4	9.9	6.0	13.2	15.1	20.8	18.1	7.2	6.4	10.0	18.8	16.5
2000	19.3	1.1	17.6	18.1	17.8	22.5	7.7	22.4	9.9	5.9	13.2	15.4	20.6	19.9	7.1	6.3	10.3	18.6	16.2
2001	19.0	1.1	17.4	18.1	17.7	22.5	7.7	22.4	9.8	5.2	13.2	15.5	20.7	20.2	7.1	6.3	10.4	18.5	16.1

**Table BI.4. PERSONAL INCOME TAX RATES –NWER–**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	12.2	27.5	12.4	2.0	1.8	6.0	5.2	3.7	7.2	14.2	10.8	5.0	15.7	26.3	15.6	10.6	4.4	8.4	10.7
1971	13.1	30.1	13.7	2.2	2.1	5.6	6.8	3.9	9.8	15.9	11.3	4.4	17.5	27.3	15.5	9.9	5.2	9.1	11.3
1972	13.9	29.0	13.8	1.7	2.0	5.8	6.4	4.4	9.4	16.8	12.1	4.1	17.7	27.1	13.7	10.5	5.3	9.3	11.1
1973	14.9	29.1	16.0	1.7	2.2	5.7	6.8	4.4	9.3	16.8	12.6	4.0	18.8	24.7	13.5	10.4	5.8	10.2	11.6
1974	16.5	33.2	17.0	2.7	2.2	6.2	7.2	5.2	9.6	17.6	13.4	4.2	19.1	27.8	16.8	11.2	6.2	11.0	12.9
1975	19.7	30.7	16.1	1.8	2.9	6.8	8.1	5.7	15.3	18.5	12.3	4.7	22.5	28.3	19.0	10.0	6.0	11.1	13.2
1976	19.2	29.7	17.1	2.5	3.2	7.6	9.9	7.0	13.3	18.2	12.2	5.4	26.6	31.8	18.8	10.7	5.7	12.0	14.1
1977	21.5	29.6	18.3	2.2	3.6	7.9	9.7	8.1	16.7	18.0	12.8	5.8	25.9	34.0	16.8	11.0	5.7	12.9	14.5
1978	23.1	30.5	17.0	2.4	4.4	7.8	9.5	8.8	16.6	18.1	14.8	5.8	22.1	33.9	15.7	11.5	5.4	12.7	14.1
1979	23.4	31.4	16.5	3.3	5.0	7.9	9.9	8.8	15.0	18.8	14.3	6.5	20.1	33.1	14.8	12.3	6.4	12.5	13.8
1980	22.7	33.1	17.3	4.1	6.0	8.8	12.7	10.1	15.7	18.9	14.8	6.4	20.5	32.3	15.3	12.5	7.1	13.1	14.5
1981	23.1	33.7	17.0	3.5	6.4	9.1	13.2	12.1	16.3	18.0	16.0	7.5	22.9	32.0	16.2	13.0	7.8	13.5	14.9
1982	24.7	32.9	17.1	4.4	6.2	9.4	14.0	13.3	15.7	18.1	15.5	8.3	22.3	32.0	16.4	12.6	8.0	13.8	15.1
1983	25.1	34.4	16.5	4.5	7.4	10.1	15.0	14.3	17.1	17.1	15.1	9.4	22.2	32.3	15.9	12.0	8.2	14.2	15.3
1984	25.8	35.3	16.7	5.3	8.0	10.4	16.1	14.1	16.9	15.7	16.3	9.2	23.1	31.4	15.5	11.3	7.9	14.3	15.4
1985	25.8	37.2	17.2	4.8	8.0	9.8	15.4	14.9	17.1	14.4	17.3	9.3	24.6	30.9	15.1	11.6	8.2	14.4	15.5
1986	25.1	37.9	16.5	4.9	7.5	9.5	16.5	14.3	15.1	15.2	17.3	7.2	26.5	31.6	15.2	11.6	8.3	14.0	15.3
1987	25.1	39.6	17.1	4.8	9.2	9.7	17.0	14.9	14.7	16.1	16.6	6.3	23.4	33.8	14.2	12.3	8.4	14.5	15.6
1988	23.8	41.6	16.6	5.2	9.3	9.0	17.9	15.5	14.2	16.9	16.6	8.0	25.9	35.4	14.2	11.7	8.1	14.4	15.5
1989	21.1	40.8	17.3	4.1	10.5	8.8	14.8	16.7	14.1	16.0	14.6	8.1	25.3	38.4	14.2	12.1	9.1	14.6	15.8
1990	22.1	38.5	15.1	4.8	10.1	8.8	14.6	16.9	15.3	18.1	15.6	7.0	27.3	36.6	16.2	11.9	10.2	14.2	15.6
1991	21.7	38.9	15.9	5.1	10.8	10.2	15.3	17.4	14.5	20.5	16.4	8.0	28.6	30.0	16.0	11.4	10.4	15.1	16.1
1992	21.3	39.4	16.9	4.5	11.8	9.2	15.6	17.2	16.1	19.7	17.1	10.0	27.9	30.3	15.3	11.1	9.8	15.2	16.0
1993	23.0	40.5	16.8	4.7	11.4	9.5	15.9	19.4	18.1	20.9	18.0	9.2	27.8	29.8	13.2	11.2	9.2	15.7	16.1
1994	23.6	41.6	16.5	5.8	11.0	9.8	16.3	17.3	16.3	16.0	16.5	8.9	30.4	28.3	13.5	11.5	7.9	15.0	15.6
1995	23.8	41.1	17.1	6.4	10.8	9.6	14.1	17.1	15.7	14.6	17.5	8.8	27.8	28.4	13.9	11.9	7.3	15.0	15.7
1996	24.0	41.3	16.9	6.3	10.8	10.4	14.2	17.5	16.4	13.8	18.7	9.2	29.1	31.5	13.2	12.6	6.9	15.3	15.9
1997	24.6	41.3	16.5	7.2	10.4	10.9	14.2	19.0	14.4	12.1	19.8	8.9	26.4	32.0	12.8	13.3	7.2	15.4	15.9
1998	25.2	40.0	17.0	8.6	10.1	14.4	13.4	15.6	13.1	11.6	19.8	8.7	26.1	34.2	15.0	13.7	5.8	15.6	16.4
1999	25.0	41.0	17.8	8.3	10.2	15.4	13.7	16.4	12.8	12.0	19.5	9.8	25.8	34.7	15.0	14.1	4.6	16.3	17.0
2000	24.8	39.8	17.7	7.8	10.3	14.6	13.0	15.7	12.5	11.3	18.3	10.0	25.8	32.3	14.8	14.0	4.6	15.8	16.5
2001	24.2	39.3	15.9	7.6	10.4	14.5	12.8	15.7	12.0	10.6	17.8	10.3	25.3	31.0	14.5	14.1	4.7	15.1	15.9

**Table BI.5. EFFECTIVE TAX RATES ON LABOUR –LETR–**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	28.3	30.0	29.4	13.1	12.1	26.6	9.8	20.7	22.5	29.9	26.5	11.3	23.3	37.0	23.7	16.7	10.7	25.3	25.5
1971	29.3	32.5	31.0	13.6	13.3	26.5	11.5	20.9	24.6	31.9	27.1	11.1	25.3	38.4	23.4	16.3	11.5	26.2	26.2
1972	30.0	31.5	31.8	13.5	13.6	27.2	11.4	21.3	24.2	33.0	27.9	11.4	25.4	38.9	22.2	17.2	11.8	26.9	26.6
1973	31.1	30.8	34.4	13.5	13.9	27.2	12.1	21.4	24.7	34.2	28.5	11.8	27.0	36.7	22.2	18.1	12.0	28.0	27.4
1974	32.4	34.6	35.5	14.7	14.0	27.7	13.6	22.2	25.1	35.4	29.5	11.2	27.6	39.2	25.7	19.0	12.7	28.8	28.7
1975	35.8	32.1	36.2	14.3	15.9	29.3	15.4	22.9	30.8	36.2	29.0	12.8	34.4	40.1	28.1	17.8	13.8	29.9	29.9
1976	35.1	31.1	37.9	15.4	16.8	30.7	17.7	24.2	30.5	36.0	29.1	13.3	38.6	45.1	28.6	18.6	13.5	31.3	31.4
1977	37.2	31.1	38.9	15.5	18.2	31.6	17.7	24.9	33.1	35.8	30.3	14.2	38.9	48.1	27.0	18.8	14.0	32.3	32.0
1978	38.3	32.0	37.8	15.8	19.7	31.8	17.3	25.5	33.1	36.3	32.3	14.4	35.1	48.8	25.4	19.6	13.9	32.3	31.8
1979	38.7	32.9	37.5	16.6	20.9	33.2	17.6	26.2	31.7	37.3	32.2	15.0	33.5	48.4	24.3	20.5	15.4	32.6	31.8
1980	38.0	34.8	38.1	18.2	22.2	34.6	20.5	27.7	32.6	37.8	33.1	15.3	34.0	48.4	25.0	20.6	16.3	33.4	32.5
1981	38.7	35.6	38.5	17.0	22.8	34.7	21.3	28.9	33.1	38.2	33.9	16.6	36.0	48.6	26.3	21.6	17.6	33.9	33.0
1982	40.7	35.2	39.1	19.4	22.9	35.6	23.4	31.1	32.8	39.5	33.7	18.3	35.1	48.6	27.0	21.3	18.0	34.8	33.8
1983	41.8	37.0	38.7	19.8	24.4	37.0	24.5	32.2	33.8	41.8	33.6	19.7	34.8	49.1	27.1	21.0	18.4	35.7	34.5
1984	43.2	37.9	39.1	21.4	24.8	38.2	25.6	31.9	34.0	40.7	34.8	19.8	35.9	48.2	26.7	20.6	18.3	36.0	34.8
1985	43.9	39.7	39.8	20.9	25.4	38.3	25.2	32.6	34.0	39.8	35.9	19.5	38.0	47.5	26.3	21.0	19.0	36.4	35.0
1986	43.8	40.2	39.3	21.4	25.4	38.5	26.0	33.0	32.3	39.0	36.0	19.8	39.5	48.3	26.4	21.2	19.3	36.4	35.3
1987	44.4	42.1	39.8	21.9	26.7	39.2	26.4	33.5	32.0	40.1	35.4	19.3	37.1	49.5	25.1	21.8	19.7	36.9	35.6
1988	43.4	43.7	39.6	21.3	26.5	39.2	27.5	34.1	32.5	41.0	35.6	20.7	39.5	51.0	24.9	21.5	19.6	37.0	35.5
1989	41.5	42.9	40.1	20.3	28.1	39.7	24.8	35.5	32.9	39.1	34.2	20.7	39.3	54.1	24.5	22.0	20.3	37.3	35.8
1990	41.9	40.9	38.3	21.4	27.9	39.7	24.6	35.9	33.3	38.5	34.8	20.1	42.0	52.9	25.6	21.8	22.5	36.9	35.7
1991	41.9	41.3	39.3	22.6	28.7	40.6	25.6	36.5	32.6	41.5	35.4	20.8	43.2	48.1	25.6	21.6	22.5	37.8	36.2
1992	41.7	41.8	40.2	22.3	30.6	40.3	26.0	36.9	34.3	41.1	36.6	22.9	44.1	47.7	25.1	21.4	22.3	38.3	36.7
1993	43.4	43.0	40.9	24.2	30.6	40.6	26.3	39.5	36.2	41.9	38.0	23.3	45.7	47.0	23.4	21.5	22.0	39.4	37.3
1994	43.8	44.5	41.7	25.5	30.6	41.1	26.6	37.9	34.4	39.5	37.7	23.2	49.2	46.3	23.8	21.8	20.9	39.5	37.4
1995	43.8	43.8	42.4	26.2	29.7	41.0	24.3	38.2	33.9	38.8	38.8	23.5	46.7	47.3	24.3	22.2	21.3	39.7	37.8
1996	44.0	44.0	43.1	26.9	30.1	42.0	23.9	38.8	34.2	37.4	40.2	24.4	46.8	50.1	23.7	22.8	21.1	40.1	38.1
1997	44.7	44.0	43.6	27.6	29.9	41.7	23.9	40.4	32.7	36.4	41.2	24.4	44.2	50.4	23.3	23.4	21.6	40.4	37.8
1998	45.1	42.7	43.7	28.7	29.6	41.3	23.2	35.3	31.7	35.9	41.0	24.8	43.8	51.9	25.4	23.6	20.9	39.3	37.3
1999	44.9	44.3	44.0	29.3	29.9	42.6	24.2	35.6	31.0	37.0	40.6	27.8	43.3	51.3	25.3	24.0	20.3	39.8	37.6
2000	44.2	43.4	43.6	29.2	29.9	41.8	22.9	35.1	30.8	36.3	39.8	28.3	43.1	51.2	24.9	23.9	21.0	39.2	36.9
2001	43.6	43.0	42.0	29.3	30.0	41.8	22.6	35.1	30.4	32.9	39.3	28.7	42.8	50.6	24.7	23.9	21.3	38.5	36.2

**Table BI.6. EFFECTIVE TAX RATES ON EMPLOYED LABOUR –LITR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	30.8	30.5	32.4	24.6	16.7	30.0	11.7	26.8	25.1	31.7	31.8	14.4	25.3	37.1	24.2	17.0	12.9	29.0	28.6
1971	31.6	32.9	33.9	24.7	18.0	29.9	13.4	26.7	27.0	33.5	32.0	14.3	27.3	38.8	23.9	16.6	13.6	29.8	29.2
1972	32.2	32.0	34.6	24.6	18.0	30.4	13.3	26.8	26.7	34.5	32.6	14.8	27.3	39.3	22.8	17.5	13.7	30.3	29.5
1973	33.1	31.1	37.1	24.3	18.2	30.3	14.0	26.9	27.0	35.9	32.9	15.4	28.8	37.1	22.6	18.4	13.8	31.4	30.3
1974	34.4	34.8	38.1	25.3	18.2	30.7	15.8	27.7	27.3	37.0	33.6	14.5	29.4	39.5	26.2	19.3	14.4	32.0	31.5
1975	37.5	32.4	38.9	24.4	20.2	32.4	18.0	28.5	32.6	37.4	33.2	16.5	37.1	40.2	28.8	18.1	15.8	33.2	32.8
1976	36.9	31.4	40.7	25.7	21.1	33.7	20.4	28.8	32.5	37.3	33.4	17.0	41.3	45.4	29.3	18.9	15.4	34.4	34.1
1977	38.9	31.4	41.4	25.8	22.8	34.5	20.3	29.3	34.9	36.8	34.4	18.3	41.7	48.3	27.7	19.1	15.9	35.2	34.6
1978	39.8	32.2	40.3	26.6	24.5	34.7	19.8	30.1	34.8	37.2	36.2	18.5	37.8	49.1	26.1	20.0	15.7	35.3	34.4
1979	40.2	33.1	39.9	27.3	25.9	36.0	20.0	27.4	33.3	38.2	36.1	19.0	36.2	48.7	25.1	20.9	17.1	35.1	34.1
1980	39.5	35.0	40.4	29.2	27.3	37.3	22.7	32.2	34.2	38.7	37.0	19.2	36.1	48.8	25.9	21.0	17.9	36.4	35.1
1981	40.2	35.8	40.9	28.3	28.0	37.2	23.5	33.4	34.5	38.9	37.8	20.6	37.7	49.0	27.3	22.1	19.2	36.8	35.5
1982	42.3	35.5	41.6	30.2	28.3	38.1	26.0	35.4	32.8	39.9	37.6	22.1	36.9	49.0	28.1	21.8	19.4	37.7	36.4
1983	43.6	37.4	40.9	31.2	28.6	39.4	27.3	37.0	33.5	41.7	37.6	23.5	36.5	49.5	28.2	21.5	19.7	38.5	37.0
1984	45.3	38.3	41.1	33.8	28.8	40.6	28.4	36.7	33.7	40.2	38.6	23.8	37.6	48.6	28.0	21.1	19.6	38.7	37.3
1985	45.9	40.1	41.5	33.1	29.4	40.6	28.0	37.2	33.6	40.0	39.7	23.6	39.7	47.8	27.5	21.4	20.3	39.1	37.5
1986	45.9	40.4	40.9	34.1	28.0	40.8	28.6	37.8	31.9	39.4	39.7	24.4	41.1	48.6	28.0	21.6	20.7	39.0	37.7
1987	46.8	42.4	41.2	35.2	29.2	41.4	29.0	38.1	31.4	39.9	39.1	24.2	38.6	49.7	26.5	22.1	21.1	39.3	37.9
1988	45.7	43.9	40.9	33.7	28.9	41.3	30.0	38.8	31.8	40.6	39.3	25.3	41.0	51.2	26.3	21.8	20.9	39.3	37.7
1989	44.1	43.1	41.4	32.7	30.1	41.6	27.2	40.4	32.2	38.8	37.9	25.2	40.6	54.2	25.8	22.3	21.7	39.6	38.0
1990	44.7	41.1	39.5	36.4	29.7	41.5	27.1	40.7	32.6	37.8	38.4	24.8	43.4	53.0	26.9	22.0	23.9	39.1	37.8
1991	44.7	41.5	40.5	37.9	30.1	42.3	27.9	41.2	31.8	40.7	38.9	25.5	44.6	48.4	26.9	21.8	23.8	39.9	38.3
1992	44.3	42.0	41.3	38.2	32.1	42.0	28.4	41.4	33.4	40.3	40.1	27.6	45.6	48.1	26.3	21.6	23.5	40.4	38.7
1993	46.1	43.2	42.1	41.2	31.9	42.4	28.6	43.4	35.2	40.9	41.5	28.1	47.5	47.6	24.6	21.9	23.0	41.3	39.2
1994	46.4	44.7	43.0	42.6	31.8	42.8	28.7	41.9	33.3	38.2	41.4	28.1	51.2	46.9	25.1	22.1	21.9	41.4	39.4
1995	46.2	44.0	43.6	42.9	30.8	42.7	26.3	42.2	32.7	37.4	42.3	28.4	48.5	48.0	25.6	22.5	22.5	41.4	39.6
1996	46.5	44.2	44.3	44.1	31.4	43.4	25.7	43.5	33.2	36.3	43.6	29.4	48.6	50.9	24.9	23.1	22.2	42.1	40.1
1997	47.1	44.2	45.0	44.5	30.9	43.0	25.5	45.3	31.6	35.1	44.4	29.3	45.9	51.1	24.5	23.6	22.7	42.3	39.8
1998	47.4	42.9	45.1	45.1	30.3	42.8	24.8	40.3	30.5	34.0	44.0	29.9	45.3	52.7	26.6	23.8	21.9	41.2	39.2
1999	47.1	44.6	45.3	45.9	30.4	43.9	25.9	40.3	29.8	34.9	43.6	33.1	44.8	52.0	26.3	24.2	21.4	41.6	39.4
2000	46.4	43.7	45.0	45.3	30.2	43.0	24.5	39.8	29.6	34.2	42.7	33.7	44.6	52.1	25.9	24.0	21.9	41.0	38.7
2001	45.7	43.3	43.4	45.1	30.2	42.8	24.3	39.8	29.1	31.0	42.3	34.0	44.3	51.4	25.7	24.0	22.2	40.2	38.0

**Table BI.7. EFFECTIVE TAX RATES ON CONSUMPTION –CETR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	30.2	38.9	23.8	20.6	13.1	30.9	26.0	19.6	13.9	18.9	35.5	18.5	28.3	25.9	27.6	13.6	15.2	24.4	25.2
1971	28.5	36.8	23.5	20.6	12.5	30.4	26.3	19.1	14.2	19.1	36.2	16.4	29.6	31.8	24.7	13.9	14.7	24.0	24.7
1972	25.6	38.6	23.8	20.7	12.8	30.8	26.1	17.5	15.8	20.2	38.2	17.1	29.2	30.0	22.7	13.7	14.4	24.0	24.3
1973	25.3	36.3	23.6	20.9	13.4	30.8	25.6	16.7	17.5	20.1	40.6	16.7	28.7	30.7	20.8	13.5	14.5	23.9	24.0
1974	25.1	33.1	22.1	18.0	11.3	29.1	27.8	16.4	16.9	18.4	38.6	14.7	27.7	27.1	20.1	13.0	14.1	22.5	22.5
1975	23.2	31.1	20.8	19.9	10.9	28.7	23.9	13.8	16.1	17.8	35.1	14.6	26.2	29.5	19.4	12.7	12.7	21.3	21.6
1976	24.5	32.6	21.1	20.3	10.5	30.1	27.7	15.6	16.2	18.9	33.2	18.4	26.1	30.6	19.3	12.3	12.4	22.2	22.5
1977	25.0	35.2	21.0	20.6	10.8	28.4	25.4	17.0	16.1	19.9	34.0	19.6	28.4	31.9	20.7	12.1	13.2	22.1	22.7
1978	24.9	38.4	21.8	20.5	10.0	29.3	23.4	16.8	17.4	19.5	34.1	19.4	29.2	29.0	20.6	11.4	12.9	22.5	22.9
1979	23.9	40.5	22.1	20.1	10.1	30.7	20.9	15.6	16.5	19.2	34.0	19.2	29.5	27.6	22.8	10.7	13.7	22.5	23.1
1980	21.7	39.0	21.5	16.8	10.1	30.4	22.5	16.6	17.4	18.5	33.7	23.5	29.6	28.5	24.6	10.6	13.9	22.4	23.2
1981	21.4	38.0	20.8	16.5	11.0	29.2	23.7	15.6	16.9	17.8	33.3	23.3	30.4	29.7	25.8	11.3	14.3	21.7	23.0
1982	21.1	36.6	20.4	19.0	11.8	29.6	27.7	16.0	18.2	18.0	32.2	24.7	29.7	28.8	25.0	10.7	13.9	21.8	22.8
1983	21.7	38.3	20.7	20.0	13.2	29.7	29.4	17.3	21.8	18.2	31.4	26.9	29.7	32.9	24.5	10.8	13.3	22.3	23.3
1984	21.4	39.6	21.0	20.7	14.4	30.5	30.2	17.5	21.8	19.3	33.6	25.1	32.3	35.6	24.2	10.8	14.1	22.8	23.8
1985	20.9	40.8	20.4	21.0	15.4	30.8	28.6	16.6	21.8	19.2	33.4	26.4	32.4	37.1	23.8	10.4	14.7	22.6	23.7
1986	20.4	45.3	20.5	24.2	18.0	30.5	28.3	17.5	22.1	20.2	32.9	29.5	33.5	38.1	23.4	10.3	14.1	23.0	24.1
1987	21.0	45.3	20.3	23.3	18.1	30.5	28.6	18.1	21.4	21.0	33.6	28.6	33.7	39.0	23.1	10.4	15.4	23.1	24.2
1988	21.7	45.7	20.6	21.6	18.6	30.9	28.8	19.2	23.3	21.4	33.3	28.9	39.2	36.5	23.3	10.4	16.0	23.8	24.6
1989	21.9	43.0	21.3	18.9	18.2	30.1	29.3	19.7	24.9	20.3	33.2	27.2	39.1	37.0	22.0	10.4	15.3	23.7	24.3
1990	22.3	41.5	21.6	21.7	18.0	30.0	28.4	20.3	24.2	20.0	32.8	26.8	36.5	40.0	21.2	10.4	15.8	23.7	24.3
1991	21.8	40.1	19.9	23.1	18.1	28.8	27.0	21.2	24.6	19.9	32.8	25.7	33.5	39.9	22.8	10.9	14.7	22.8	23.7
1992	22.1	39.6	19.8	23.8	18.8	28.1	27.0	20.7	25.6	20.3	32.4	27.7	31.7	34.8	21.8	10.9	15.2	22.6	23.2
1993	23.3	39.5	20.4	22.2	17.3	28.2	26.0	23.1	30.9	20.6	32.4	24.8	31.0	32.0	20.9	10.9	14.7	23.1	23.4
1994	24.2	40.0	21.2	21.6	18.4	29.8	28.0	22.1	31.1	20.6	32.0	25.9	31.5	30.8	21.3	11.0	14.6	23.8	24.0
1995	23.8	40.1	20.3	21.2	18.1	30.6	28.6	22.7	28.7	20.8	28.6	26.9	30.2	30.1	21.5	11.0	14.9	23.6	23.8
1996	25.0	41.6	20.0	22.0	18.2	32.2	29.5	22.2	28.8	21.8	28.6	27.2	28.8	31.6	21.4	10.7	15.2	23.9	24.1
1997	25.8	42.4	20.0	23.2	18.9	32.7	30.5	23.6	32.0	22.5	29.6	27.4	32.2	32.8	22.2	10.6	14.9	24.5	24.8
1998	25.6	43.7	20.5	23.9	20.3	33.1	31.6	30.3	33.9	22.9	30.2	28.3	32.1	34.8	22.1	10.4	15.9	26.2	26.1
1999	25.7	43.2	21.7	25.0	21.5	32.8	32.9	29.7	34.6	24.0	30.6	29.3	32.3	38.9	22.0	10.3	15.7	26.7	26.5
2000	26.0	42.1	21.9	25.8	22.0	31.8	33.3	29.8	35.4	24.2	31.4	30.5	32.5	32.4	22.2	10.1	15.6	26.7	26.3
2001	26.3	42.0	22.6	26.3	22.4	31.5	32.8	29.7	36.5	25.4	31.8	31.2	33.1	31.9	22.6	10.0	16.0	27.0	26.6

**Table BI.8. "IMPLICIT" TAX RATES ON CONSUMPTION –CITR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	23.2	28.0	19.2	17.1	11.6	23.6	20.6	16.4	12.2	15.9	26.2	15.6	22.0	20.6	21.6	11.9	13.2	19.4	20.0
1971	22.2	26.9	19.1	17.0	11.1	23.3	20.8	16.0	12.4	16.1	26.6	14.1	22.9	24.1	19.8	12.2	12.8	19.2	19.6
1972	20.4	27.8	19.2	17.2	11.3	23.5	20.7	14.9	13.6	16.8	27.7	14.6	22.6	23.1	18.5	12.0	12.6	19.1	19.4
1973	20.2	26.6	19.1	17.3	11.8	23.6	20.4	14.3	14.9	16.7	28.9	14.3	22.3	23.5	17.2	11.9	12.7	19.1	19.2
1974	20.1	24.9	18.1	15.3	10.2	22.6	21.8	14.1	14.5	15.6	27.9	12.8	21.7	21.3	16.7	11.5	12.3	18.1	18.2
1975	18.8	23.7	17.2	16.6	9.9	22.3	19.3	12.1	13.9	15.1	26.0	12.7	20.8	22.8	16.2	11.3	11.2	17.3	17.6
1976	19.7	24.6	17.4	16.9	9.5	23.2	21.7	13.5	13.9	15.9	24.9	15.6	20.7	23.5	16.1	10.9	11.0	18.0	18.1
1977	20.0	26.1	17.4	17.1	9.7	22.1	20.3	14.5	13.8	16.6	25.4	16.4	22.1	24.2	17.1	10.8	11.6	18.0	18.3
1978	19.9	27.8	17.9	17.0	9.1	22.7	19.0	14.4	14.8	16.4	25.4	16.3	22.6	22.5	17.1	10.2	11.4	18.2	18.4
1979	19.3	28.8	18.1	16.7	9.2	23.5	17.3	13.5	14.1	16.1	25.4	16.1	22.8	21.6	18.6	9.6	12.1	18.2	18.6
1980	17.8	28.1	17.7	14.4	9.1	23.3	18.4	14.2	14.8	15.6	25.2	19.0	22.8	22.2	19.7	9.6	12.2	18.1	18.6
1981	17.6	27.5	17.2	14.2	9.9	22.6	19.2	13.5	14.4	15.1	25.0	18.9	23.3	22.9	20.5	10.1	12.5	17.6	18.5
1982	17.4	26.8	16.9	16.0	10.5	22.9	21.7	13.8	15.4	15.3	24.4	19.8	22.9	22.4	20.0	9.7	12.2	17.7	18.4
1983	17.9	27.7	17.2	16.7	11.6	22.9	22.7	14.8	17.9	15.4	23.9	21.2	22.9	24.8	19.6	9.7	11.7	18.1	18.7
1984	17.7	28.4	17.3	17.2	12.6	23.3	23.2	14.9	17.9	16.2	25.2	20.1	24.4	26.3	19.5	9.7	12.4	18.4	19.1
1985	17.3	29.0	17.0	17.4	13.3	23.5	22.2	14.2	17.9	16.1	25.0	20.9	24.5	27.1	19.2	9.5	12.8	18.3	19.0
1986	17.0	31.2	17.0	19.5	15.3	23.4	22.1	14.9	18.1	16.8	24.8	22.8	25.1	27.6	18.9	9.4	12.4	18.5	19.2
1987	17.4	31.2	16.9	18.9	15.3	23.4	22.3	15.3	17.6	17.4	25.2	22.2	25.2	28.1	18.8	9.4	13.3	18.6	19.3
1988	17.9	31.4	17.1	17.8	15.7	23.6	22.3	16.1	18.9	17.6	25.0	22.4	28.1	26.7	18.9	9.5	13.8	19.0	19.5
1989	18.0	30.1	17.6	15.9	15.4	23.1	22.7	16.4	19.9	16.9	24.9	21.4	28.1	27.0	18.0	9.4	13.3	19.0	19.3
1990	18.3	29.3	17.8	17.8	15.2	23.1	22.1	16.9	19.5	16.7	24.7	21.1	26.7	28.6	17.5	9.5	13.7	19.1	19.4
1991	17.9	28.6	16.6	18.8	15.3	22.4	21.2	17.5	19.7	16.6	24.7	20.5	25.1	28.5	18.5	9.8	12.8	18.5	19.0
1992	18.1	28.4	16.5	19.2	15.8	22.0	21.2	17.2	20.4	16.9	24.4	21.7	24.1	25.8	17.9	9.8	13.2	18.3	18.7
1993	18.9	28.3	16.9	18.2	14.7	22.0	20.7	18.7	23.6	17.1	24.5	19.9	23.7	24.2	17.3	9.8	12.8	18.7	18.8
1994	19.5	28.6	17.5	17.8	15.6	23.0	21.9	18.1	23.7	17.1	24.3	20.6	24.0	23.5	17.5	9.9	12.7	19.2	19.2
1995	19.2	28.6	16.9	17.5	15.3	23.4	22.2	18.5	22.3	17.2	22.2	21.2	23.2	23.1	17.7	9.9	13.0	19.0	19.1
1996	20.0	29.4	16.7	18.1	15.4	24.4	22.8	18.2	22.4	17.9	22.2	21.4	22.4	24.0	17.6	9.6	13.2	19.2	19.3
1997	20.5	29.8	16.7	18.8	15.9	24.6	23.4	19.1	24.3	18.4	22.9	21.5	24.4	24.7	18.2	9.6	13.0	19.6	19.7
1998	20.4	30.4	17.0	19.3	16.8	24.8	24.0	23.2	25.3	18.6	23.2	22.0	24.3	25.8	18.1	9.4	13.8	20.6	20.5
1999	20.4	30.2	17.9	20.0	17.7	24.7	24.8	22.9	25.7	19.4	23.4	22.7	24.4	28.0	18.1	9.3	13.6	20.9	20.8
2000	20.6	29.6	18.0	20.5	18.1	24.1	25.0	23.0	26.1	19.5	23.9	23.4	24.5	24.5	18.2	9.2	13.5	21.0	20.7
2001	20.8	29.6	18.4	20.8	18.3	23.9	24.7	22.9	26.7	20.2	24.1	23.8	24.9	24.2	18.4	9.1	13.8	21.2	20.9



**Table BI.9. TAX-WEDGE ON TOTAL EMPLOYMENT –WEDG-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	44.9	49.6	42.9	28.0	22.3	43.9	28.4	33.7	31.9	41.1	45.8	25.1	40.2	50.0	40.2	26.7	22.5	39.7	40.3
1971	45.0	50.6	44.2	28.4	22.9	43.7	29.9	33.5	33.9	42.8	46.5	23.6	42.4	53.3	38.6	26.5	22.9	40.3	40.6
1972	44.3	50.6	44.9	28.4	23.4	44.3	29.8	33.0	34.6	44.2	47.9	24.3	42.3	53.0	36.6	27.1	22.9	40.7	40.7
1973	45.0	49.2	46.9	28.4	24.0	44.3	30.0	32.7	35.9	45.2	49.2	24.4	43.3	51.5	35.6	27.8	23.2	41.7	41.2
1974	46.0	50.8	47.2	27.7	22.8	44.0	32.4	33.1	35.9	45.4	49.1	22.6	43.3	52.2	38.1	28.3	23.5	41.6	41.5
1975	47.9	48.2	47.2	28.5	24.2	45.0	31.7	32.3	40.4	45.8	47.4	23.9	48.0	53.7	39.8	27.0	23.5	41.9	42.1
1976	47.9	48.1	48.7	29.7	24.6	46.7	35.5	34.5	40.2	46.2	46.8	26.8	51.3	58.0	40.1	27.4	23.1	43.5	43.7
1977	49.7	49.1	49.5	29.9	26.2	46.7	34.3	35.8	42.4	46.4	48.0	28.3	52.4	60.6	39.5	27.5	24.0	44.3	44.3
1978	50.6	50.9	48.9	30.2	27.0	47.3	33.0	36.3	43.0	46.7	49.5	28.4	49.7	60.3	38.2	27.8	23.8	44.5	44.2
1979	50.5	52.2	48.8	30.6	28.2	48.9	31.8	36.2	41.3	47.4	49.4	28.7	48.6	59.6	38.4	28.1	25.7	44.7	44.4
1980	49.0	53.1	49.0	30.0	29.3	49.8	35.1	38.0	42.6	47.5	50.0	31.4	49.1	59.9	39.8	28.2	26.5	45.3	45.0
1981	49.5	53.3	49.1	28.8	30.4	49.4	36.4	38.5	42.7	47.5	50.4	32.4	50.9	60.4	41.4	29.6	27.9	45.4	45.2
1982	51.0	52.6	49.4	32.2	31.0	50.3	40.0	40.6	43.1	48.8	49.9	34.5	50.0	60.1	41.7	29.0	28.0	46.2	45.9
1983	52.2	54.5	49.2	33.2	33.2	51.4	41.6	42.3	45.6	50.8	49.5	36.7	49.7	61.7	41.4	28.7	27.9	47.2	46.7
1984	53.2	55.5	49.7	34.9	34.3	52.6	42.8	42.1	45.8	50.3	51.2	35.9	51.6	61.8	41.0	28.3	28.4	47.7	47.1
1985	53.6	57.2	50.0	34.7	35.3	52.8	41.8	42.2	45.8	49.4	52.0	36.3	53.2	61.8	40.4	28.5	29.4	48.0	47.3
1986	53.3	58.8	49.6	36.7	36.7	52.8	42.4	43.0	44.6	49.2	51.8	38.1	54.7	62.6	40.3	28.6	29.3	48.2	47.6
1987	54.1	60.2	49.9	36.6	38.0	53.4	42.8	43.7	44.0	50.5	51.6	37.3	53.0	63.7	39.2	29.2	30.4	48.6	47.9
1988	53.5	61.3	49.9	35.3	38.1	53.5	43.7	44.8	45.2	51.4	51.7	38.5	56.5	64.1	39.1	28.9	30.7	48.9	48.0
1989	52.0	60.1	50.6	32.9	39.2	53.6	41.8	46.1	46.3	49.4	50.6	37.7	56.3	66.5	38.1	29.3	30.9	49.2	48.1
1990	52.5	58.2	49.3	35.4	38.9	53.6	41.3	46.7	46.3	48.8	50.9	36.9	57.5	66.4	38.6	29.2	33.1	48.8	48.0
1991	52.3	58.1	49.4	37.1	39.7	53.9	41.4	47.6	45.9	51.2	51.4	37.0	57.5	62.9	39.4	29.3	32.4	49.2	48.3
1992	52.2	58.3	50.1	37.3	41.6	53.4	41.8	47.7	47.7	51.0	52.1	39.6	57.5	61.2	38.5	29.1	32.5	49.6	48.5
1993	54.1	59.1	50.9	38.0	40.8	53.7	41.5	50.8	51.2	51.8	53.2	38.5	58.6	59.9	36.6	29.2	32.0	50.7	49.1
1994	54.8	60.3	51.9	38.8	41.4	54.6	42.7	49.1	50.0	49.9	52.8	39.0	61.4	58.9	37.2	29.6	30.9	51.1	49.4
1995	54.6	59.9	52.1	39.1	40.5	54.9	41.2	49.6	48.6	49.3	52.4	39.7	59.0	59.5	37.7	29.9	31.5	51.1	49.6
1996	55.2	60.4	52.6	40.1	40.8	56.1	41.3	49.9	49.0	48.6	53.5	40.6	58.7	62.1	37.2	30.3	31.5	51.6	50.0
1997	56.1	60.7	53.0	41.2	41.0	56.1	41.7	51.8	49.0	48.1	54.7	40.6	57.8	62.6	37.3	30.7	31.8	52.0	50.0
1998	56.3	60.1	53.3	42.4	41.5	55.9	41.6	50.3	49.0	47.8	54.7	41.4	57.4	64.3	39.0	30.8	31.8	51.8	50.1
1999	56.1	61.1	54.0	43.5	42.3	56.8	43.0	50.3	48.8	49.2	54.5	44.1	57.2	64.9	38.7	31.1	31.1	52.4	50.5
2000	55.8	60.2	53.8	43.7	42.6	55.8	42.1	50.0	48.9	48.7	54.2	45.1	57.1	63.2	38.6	30.9	31.6	52.0	49.9
2001	55.3	59.9	52.7	44.1	42.8	55.7	41.7	50.0	49.0	46.5	54.0	45.7	57.0	62.5	38.6	30.8	32.1	51.5	49.5

**Table BI.10. TOTAL TAX-WEDGE ON EMPLOYED LABOUR –TWEL-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	46.8	49.9	45.4	37.5	26.4	46.5	29.9	38.8	34.2	42.5	49.6	27.7	41.7	50.0	40.6	26.9	24.4	42.7	42.8
1971	46.8	51.0	46.5	37.6	27.1	46.2	31.4	38.4	36.1	44.2	50.1	26.4	43.9	53.6	39.0	26.8	24.7	43.2	43.0
1972	46.0	50.9	47.2	37.6	27.3	46.8	31.3	37.7	36.7	45.5	51.2	27.2	43.7	53.3	37.1	27.4	24.6	43.5	43.0
1973	46.6	49.4	49.1	37.4	27.8	46.7	31.5	37.4	37.9	46.6	52.2	27.5	44.7	51.8	35.9	28.2	24.7	44.4	43.5
1974	47.5	51.0	49.3	36.7	26.5	46.4	34.1	37.8	37.8	46.8	52.1	25.4	44.7	52.4	38.5	28.6	25.0	44.2	43.8
1975	49.3	48.4	49.4	37.0	28.1	47.5	33.8	37.2	42.0	46.9	50.6	27.1	50.2	53.9	40.3	27.3	25.2	44.7	44.5
1976	49.3	48.2	51.0	38.2	28.6	49.1	37.7	38.4	41.9	47.2	50.0	29.9	53.4	58.2	40.7	27.8	24.7	46.1	45.9
1977	51.1	49.3	51.6	38.5	30.3	49.0	36.5	39.5	43.9	47.3	51.0	31.7	54.6	60.8	40.1	27.9	25.7	46.8	46.5
1978	51.8	51.0	51.0	39.1	31.4	49.5	35.0	40.1	44.4	47.4	52.4	31.7	51.8	60.5	38.8	28.1	25.4	46.9	46.4
1979	51.7	52.4	50.8	39.5	32.7	51.0	33.8	37.2	42.7	48.1	52.3	32.1	50.7	59.8	39.0	28.5	27.2	46.7	46.2
1980	50.3	53.3	50.9	39.4	34.0	51.9	36.9	41.9	44.0	48.3	52.9	34.5	50.6	60.2	40.5	28.6	27.9	47.8	47.1
1981	50.8	53.5	51.1	38.5	35.2	51.4	38.2	42.4	44.0	48.1	53.3	35.6	52.2	60.7	42.2	30.0	29.3	47.9	47.4
1982	52.3	52.8	51.5	41.4	35.8	52.2	42.0	44.4	43.1	49.1	52.8	37.6	51.4	60.4	42.5	29.4	29.3	48.7	48.0
1983	53.7	54.7	51.1	42.6	36.9	53.3	43.8	46.3	45.4	50.7	52.5	39.7	51.0	62.0	42.3	29.1	29.1	49.5	48.8
1984	54.9	55.8	51.3	45.2	37.8	54.5	45.0	46.1	45.6	49.9	54.1	39.1	52.9	62.1	42.0	28.8	29.5	49.9	49.2
1985	55.3	57.4	51.4	44.7	38.8	54.6	44.0	46.1	45.5	49.6	54.8	39.5	54.5	61.9	41.4	28.8	30.5	50.2	49.2
1986	55.1	59.0	50.9	46.9	39.0	54.6	44.4	47.1	44.2	49.6	54.6	41.7	55.9	62.7	41.7	29.0	30.5	50.2	49.6
1987	56.0	60.4	51.1	47.4	40.1	55.1	44.8	47.6	43.5	50.4	54.4	41.1	54.1	63.8	40.3	29.5	31.6	50.6	49.7
1988	55.4	61.5	51.0	45.5	40.1	55.1	45.6	48.7	44.7	51.0	54.4	42.1	57.6	64.2	40.2	29.2	31.8	50.8	49.8
1989	54.1	60.2	51.6	43.4	40.9	55.1	43.7	50.2	45.7	49.1	53.3	41.2	57.3	66.5	39.2	29.6	32.1	51.1	49.9
1990	54.8	58.4	50.3	47.7	40.4	55.0	43.2	50.7	45.7	48.2	53.6	40.7	58.5	66.4	39.7	29.4	34.3	50.7	49.7
1991	54.6	58.2	50.3	49.6	40.9	55.2	43.2	51.5	45.3	50.5	54.0	40.7	58.5	63.1	40.5	29.5	33.6	50.9	50.0
1992	54.3	58.5	51.0	50.1	42.9	54.8	43.6	51.5	47.0	50.4	54.8	43.3	58.7	61.5	39.5	29.3	33.5	51.3	50.1
1993	56.3	59.3	51.9	51.9	41.9	55.1	43.3	54.0	50.5	51.0	55.8	42.4	59.9	60.3	37.6	29.6	32.9	52.2	50.6
1994	56.8	60.5	53.0	52.8	42.5	56.0	44.3	52.4	49.1	48.7	55.6	42.9	62.9	59.4	38.2	29.9	31.8	52.6	51.0
1995	56.6	60.0	53.1	52.9	41.4	56.1	42.7	52.9	47.7	48.2	55.1	43.6	60.5	60.0	38.8	30.1	32.5	52.5	51.1
1996	57.2	60.6	53.6	54.2	41.9	57.2	42.6	53.8	48.1	47.7	56.1	44.5	60.1	62.6	38.2	30.5	32.4	53.1	51.6
1997	58.0	60.8	54.2	54.9	41.9	57.1	42.9	55.7	48.2	47.0	57.1	44.5	59.1	63.2	38.2	30.9	32.7	53.6	51.6
1998	58.1	60.3	54.4	55.7	42.0	57.0	42.9	54.1	48.1	46.3	57.0	45.3	58.6	64.9	39.9	31.0	32.7	53.3	51.6
1999	57.9	61.3	55.1	56.7	42.7	57.8	44.3	54.0	47.8	47.5	56.8	48.2	58.3	65.5	39.6	31.3	32.1	53.8	51.9
2000	57.5	60.4	54.9	56.5	42.8	56.7	43.4	53.7	48.0	47.0	56.4	49.2	58.2	63.8	39.4	31.0	32.5	53.4	51.3
2001	57.0	60.1	53.8	56.5	42.9	56.5	43.0	53.6	48.0	44.9	56.2	49.7	58.1	63.2	39.4	30.9	32.9	52.8	50.9

**Table BI.11. EFFECTIVE TAX RATES ON CAPITAL (GROSS) –KETG-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	16.0	23.3	18.3	9.2	8.9	15.5	26.9	11.9	13.7	19.5	15.5	9.2	14.6	20.1	35.2	26.3	19.0	15.5	19.0
1971	17.0	23.0	17.8	9.6	9.7	14.3	26.1	12.9	15.2	20.7	15.7	9.1	14.0	19.0	32.4	24.0	21.2	15.5	18.4
1972	17.7	23.4	17.3	9.6	9.8	14.3	22.1	14.1	14.9	20.5	15.4	8.6	14.1	19.3	29.8	26.1	20.4	15.5	17.9
1973	19.9	25.3	19.5	6.8	10.4	14.9	20.8	12.7	15.6	21.6	14.8	8.4	14.7	18.7	28.6	25.5	23.6	16.4	18.2
1974	20.3	24.6	19.2	9.3	9.8	16.1	28.2	9.9	18.6	22.0	15.8	9.8	14.7	19.0	34.8	25.9	31.9	16.2	18.8
1975	21.6	21.6	17.8	7.9	10.5	15.4	22.5	11.2	22.9	23.4	16.8	23.2	14.0	20.3	32.3	22.6	29.3	16.1	18.5
1976	21.2	22.8	19.1	10.4	10.5	17.9	23.8	12.1	24.7	22.1	15.5	19.7	16.1	20.0	28.7	23.7	27.9	17.2	18.8
1977	21.4	21.7	20.8	9.1	10.2	16.9	18.0	13.0	32.6	22.7	15.7	10.8	13.8	16.5	27.3	24.5	29.8	17.5	18.7
1978	21.9	22.4	19.9	9.7	10.2	15.5	15.6	15.7	34.2	22.8	17.3	7.8	13.6	17.4	27.1	24.1	28.5	17.4	18.6
1979	22.4	22.1	19.5	8.6	11.1	16.1	17.0	14.5	28.1	22.0	17.3	7.9	13.4	18.6	27.9	23.2	28.9	17.2	18.7
1980	21.3	20.9	19.0	8.6	11.6	17.7	18.5	15.8	27.4	22.5	16.9	8.2	13.2	17.8	31.8	22.4	30.1	17.5	19.7
1981	20.4	19.4	17.8	7.5	11.8	18.1	19.3	17.3	27.5	21.7	16.8	9.4	14.1	17.4	34.9	21.1	30.5	17.5	20.3
1982	21.6	19.8	17.6	9.8	10.2	18.9	18.9	18.4	26.4	21.0	15.3	9.9	14.4	19.3	35.5	19.3	30.1	17.6	20.6
1983	21.4	22.4	17.4	8.9	11.6	17.8	18.9	19.1	29.6	19.7	15.4	11.4	14.4	20.8	34.1	18.1	30.2	17.5	20.3
1984	22.7	25.1	17.7	8.7	11.4	18.6	19.1	19.9	26.8	18.4	16.4	11.0	14.8	21.4	35.5	18.7	30.3	17.9	20.8
1985	21.8	25.7	18.4	8.4	12.3	18.3	18.2	19.5	29.7	19.4	17.2	11.1	14.9	21.3	36.2	18.8	29.2	18.1	21.2
1986	22.1	28.6	18.0	9.3	12.8	18.5	19.0	19.9	26.6	20.6	16.7	9.1	15.1	23.7	34.5	18.9	28.8	18.2	20.9
1987	22.0	25.3	17.5	9.8	16.1	18.5	19.1	21.1	28.4	22.5	15.9	8.5	14.1	27.6	34.3	20.4	31.9	18.6	21.2
1988	21.7	23.9	17.4	10.0	16.3	18.1	20.3	20.3	28.6	21.7	16.5	9.9	16.1	26.1	35.2	20.3	32.2	18.4	21.3
1989	21.1	24.6	18.1	9.4	19.0	18.1	17.9	22.1	29.6	20.5	17.6	15.2	16.3	25.3	38.0	20.4	31.8	19.2	22.3
1990	20.1	23.1	16.2	12.4	19.9	17.9	18.9	22.7	31.0	21.5	17.5	18.0	15.2	22.4	34.4	19.9	29.5	18.8	21.3
1991	19.6	23.0	15.1	11.1	18.8	17.3	20.0	22.8	30.2	22.6	18.1	21.7	11.6	21.5	31.8	19.5	28.7	18.3	20.3
1992	18.3	23.6	14.9	11.7	19.0	17.3	21.5	24.2	30.5	21.6	19.3	23.4	11.1	20.9	28.6	19.3	26.7	18.4	19.9
1993	20.7	25.7	14.1	12.0	17.4	16.7	22.6	26.3	37.4	22.7	18.1	19.7	11.2	21.6	28.2	19.9	23.8	18.1	19.7
1994	21.4	27.6	13.5	13.9	16.5	17.3	23.8	24.4	34.3	21.4	14.6	18.9	14.1	23.5	28.6	20.4	23.4	17.5	19.4
1995	22.2	27.1	13.7	14.8	16.3	17.8	20.6	23.5	34.1	20.9	15.8	19.7	17.8	25.4	30.4	20.8	23.5	17.5	19.6
1996	22.2	27.9	15.3	14.1	17.0	18.4	21.3	24.7	35.9	23.6	18.5	21.9	20.4	27.4	30.8	21.2	23.3	19.0	20.9
1997	23.4	27.9	15.2	15.9	18.6	19.7	21.5	26.2	34.2	24.2	18.4	23.2	22.6	28.2	33.0	21.6	22.7	19.8	22.3
1998	23.8	28.4	15.4	20.3	18.5	21.6	20.5	25.5	34.3	24.3	19.2	22.1	24.3	28.5	34.1	22.3	23.5	20.2	22.9
1999	23.4	29.0	15.9	19.5	18.5	22.8	20.8	26.5	34.0	24.9	18.8	24.6	24.2	27.9	35.0	22.8	18.7	20.9	23.7
2000	23.7	28.8	16.0	18.5	18.4	22.0	19.8	25.6	33.4	24.0	17.9	25.4	24.4	27.5	34.5	22.7	17.9	20.6	23.5
2001	23.5	29.0	14.8	17.8	18.5	21.8	19.5	25.4	32.2	23.3	17.3	26.0	24.3	27.3	34.0	22.9	17.6	20.0	23.0

**Table BI.12. EFFECTIVE TAX RATES ON CAPITAL (NET) –KETN-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	31.0	52.0	30.9	12.8	18.4	25.6	51.0	21.7	23.0	39.2	30.4	12.3	27.0	38.0	62.7	40.3	35.3	27.3	33.8
1971	34.4	56.2	31.4	13.0	20.0	24.0	50.8	25.3	31.4	47.6	33.5	12.5	31.3	40.7	57.6	36.5	45.2	28.8	34.3
1972	35.5	48.1	30.6	13.0	19.5	24.1	36.1	27.4	29.0	45.8	31.6	11.7	30.9	39.7	53.0	39.4	45.4	28.6	33.1
1973	38.3	48.9	35.1	8.5	20.3	25.1	32.9	24.3	28.2	46.0	33.1	10.8	31.8	35.8	50.3	38.2	54.2	30.1	33.2
1974	42.1	59.4	37.9	12.0	18.6	30.0	59.5	19.9	31.5	52.5	34.8	13.6	30.3	37.7	77.2	40.8	84.2	32.3	38.7
1975	49.5	61.6	36.4	10.3	21.9	34.3	39.6	27.9	115.2	73.0	48.7	13.0	42.1	40.8	84.1	36.2	102.3	36.0	42.9
1976	49.2	57.7	36.3	13.8	22.7	41.5	43.7	27.8	60.0	55.8	38.4	12.0	61.5	47.0	66.9	37.4	89.7	37.0	41.3
1977	54.4	59.1	39.9	12.9	21.1	38.6	27.1	31.1	115.1	60.2	38.3	11.5	53.5	54.3	54.7	38.2	100.8	39.1	41.7
1978	55.2	62.6	37.4	14.1	20.2	35.2	23.5	35.0	91.2	60.9	98.2	11.3	41.3	51.3	55.2	37.5	81.5	39.4	42.1
1979	56.6	67.2	36.6	12.6	23.4	37.5	28.1	29.7	73.7	65.3	60.4	10.7	34.2	47.0	59.0	36.8	82.7	38.0	41.5
1980	54.3	76.5	39.8	12.3	24.7	49.1	41.7	31.4	87.4	65.9	65.9	11.1	35.9	43.5	78.0	37.3	81.5	42.4	48.2
1981	52.6	68.9	39.7	11.4	28.2	52.5	38.4	38.6	98.4	58.7	95.8	13.1	42.7	45.4	94.6	35.3	88.6	45.2	53.4
1982	52.3	56.4	39.7	15.1	22.2	55.6	35.3	41.6	65.5	57.0	59.1	13.8	40.5	44.1	82.8	34.7	89.6	44.6	50.6
1983	52.3	60.8	36.4	15.3	26.1	50.5	36.0	43.8	72.5	47.6	46.2	15.5	39.6	45.4	71.9	30.5	88.7	42.1	47.0
1984	50.8	63.6	35.9	13.9	22.7	47.8	31.9	42.0	61.3	39.0	54.6	14.5	39.9	43.8	77.3	30.0	79.9	40.2	46.3
1985	47.7	64.4	36.4	13.5	24.0	44.1	28.5	40.4	69.0	39.0	57.4	14.3	44.3	45.0	75.1	30.2	68.5	39.3	45.5
1986	47.7	73.5	34.0	14.3	23.3	38.9	30.4	38.3	53.4	43.4	55.5	11.6	47.4	50.5	74.9	30.5	65.2	37.1	43.5
1987	48.2	80.3	33.4	15.1	28.3	38.1	30.5	40.2	63.2	52.0	55.5	10.8	45.1	60.4	71.4	33.2	75.6	38.0	44.3
1988	45.4	84.2	32.0	15.2	28.1	36.4	31.1	38.4	54.7	49.5	52.7	12.4	47.8	57.2	73.4	33.0	72.4	36.4	43.7
1989	40.7	72.2	32.5	14.8	31.6	34.8	27.0	41.4	54.4	42.9	51.0	19.0	48.6	59.4	85.5	32.6	73.0	36.5	45.4
1990	42.2	61.2	28.5	19.7	33.6	35.0	28.0	44.4	63.5	43.9	46.4	23.2	58.5	60.9	81.7	31.8	67.3	36.6	44.4
1991	43.9	59.5	29.6	16.1	31.8	34.2	30.5	45.9	69.1	46.7	48.1	29.5	131.1	57.1	80.9	31.9	66.3	38.4	45.3
1992	42.1	59.1	31.1	16.9	32.9	34.1	33.7	49.2	69.2	47.5	55.4	33.2	70.7	49.4	61.5	31.5	65.1	38.4	42.0
1993	49.3	63.6	31.4	16.9	30.3	32.8	34.3	54.2	77.7	52.0	58.8	27.1	39.4	49.5	56.1	31.9	59.1	38.5	41.4
1994	50.1	58.5	28.6	19.6	27.6	33.0	36.8	46.7	63.9	44.8	45.7	25.1	39.1	45.6	53.6	32.7	62.2	35.2	38.3
1995	49.6	57.0	28.4	21.3	26.2	33.5	29.9	42.4	65.6	43.4	45.7	26.2	41.3	44.8	57.1	33.0	66.2	34.2	37.8
1996	52.9	58.5	31.8	20.3	27.2	35.1	30.3	43.6	69.7	49.8	46.2	29.0	46.8	52.4	56.0	33.1	61.1	36.8	40.1
1997	55.3	60.7	30.6	24.4	29.7	37.1	29.8	46.9	58.4	48.8	45.8	30.7	47.5	55.2	58.3	33.6	60.2	37.8	41.9
1998	55.1	62.0	30.0	32.4	29.8	40.5	28.2	46.1	56.4	48.9	47.6	28.6	48.0	58.8	61.1	35.1	72.4	38.2	43.0
1999	55.0	63.0	31.7	31.1	29.9	42.9	28.5	48.0	56.5	51.1	48.9	32.7	48.6	62.7	63.6	36.2	54.2	39.9	44.9
2000	52.9	60.2	31.1	29.2	29.8	39.7	27.2	45.3	55.1	48.3	44.8	34.4	48.6	54.8	61.8	36.0	47.6	38.2	43.3
2001	50.1	59.0	27.7	27.6	29.9	38.7	26.7	44.0	51.9	45.5	42.6	35.2	47.3	51.8	62.1	36.5	45.9	36.2	41.8

**Table BI.13. "IMPLICIT" TAX RATES ON CAPITAL (GROSS) –KITG-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	16.5	24.7	17.1	6.6	5.3	14.8	15.0	8.7	13.5	20.5	15.1	7.2	14.9	23.0	31.6	24.2	13.4	14.1	17.4
1971	17.5	25.4	17.2	7.0	5.8	13.9	15.5	9.3	15.0	22.1	15.4	6.8	15.2	21.8	29.4	22.2	14.7	14.3	17.2
1972	18.3	25.0	16.9	6.9	6.0	14.1	14.6	10.3	14.6	22.4	15.7	6.4	15.3	21.8	27.1	24.1	14.5	14.5	16.9
1973	20.3	26.3	19.3	5.8	6.4	14.4	14.3	9.5	15.3	23.2	15.7	6.5	16.0	20.5	26.4	23.8	16.3	15.4	17.3
1974	21.0	27.2	19.4	7.6	6.2	15.4	16.7	8.2	17.9	24.2	16.6	6.7	15.9	21.3	31.5	24.2	20.2	15.6	18.1
1975	23.5	24.4	18.3	6.6	6.8	15.1	15.0	9.0	22.4	26.1	16.8	7.2	17.0	22.7	29.6	21.3	18.1	15.6	17.9
1976	23.0	24.8	19.4	8.3	7.0	17.2	16.7	11.4	23.6	24.9	16.1	7.2	20.1	23.1	27.0	22.4	17.4	17.0	18.6
1977	24.0	24.0	21.0	7.4	7.1	16.9	14.7	12.4	29.8	25.5	16.8	7.4	18.1	21.0	25.8	23.0	18.5	17.7	18.8
1978	25.0	24.7	20.0	7.5	7.5	16.2	13.4	14.3	31.4	25.9	19.0	6.9	16.3	21.7	25.4	22.8	18.3	17.6	18.8
1979	25.4	24.7	19.6	7.5	8.3	17.1	14.1	17.7	26.6	25.8	18.7	7.3	15.3	22.3	25.6	22.2	19.6	18.2	19.3
1980	24.5	24.4	19.4	7.9	9.0	18.6	16.0	15.4	26.2	26.1	18.8	7.5	16.2	21.2	28.4	21.4	21.1	18.1	19.8
1981	24.5	23.2	18.4	6.9	9.3	19.1	16.8	16.9	26.4	25.8	19.4	8.6	18.0	20.8	30.6	20.4	22.0	18.2	20.3
1982	25.6	23.0	18.2	9.2	8.5	20.0	17.0	18.7	27.8	26.2	18.3	9.5	17.7	22.2	31.5	18.9	22.1	18.7	20.8
1983	25.6	25.2	18.4	9.0	11.6	19.7	17.3	19.4	31.0	26.3	18.0	10.9	17.5	23.3	30.5	17.7	22.8	19.1	21.1
1984	26.5	27.3	19.1	9.0	11.9	20.5	17.9	19.8	28.6	24.9	19.1	10.7	18.0	23.5	31.1	18.2	23.3	19.6	21.5
1985	26.2	28.1	20.2	8.7	12.6	20.3	17.3	20.0	31.0	24.3	20.1	10.7	18.6	23.4	31.7	18.4	23.5	19.9	21.9
1986	26.1	30.5	19.9	9.2	14.2	20.3	18.2	20.2	28.2	24.8	19.8	9.0	19.4	25.5	29.5	18.6	23.4	20.0	21.7
1987	25.9	28.5	19.8	9.1	16.8	20.5	18.5	21.3	29.9	27.7	19.2	8.3	17.8	29.2	29.5	20.0	25.4	20.5	22.2
1988	25.1	27.9	19.7	9.2	16.9	20.1	19.8	20.9	30.1	27.6	19.5	9.8	19.7	27.9	30.1	20.0	25.8	20.4	22.2
1989	23.6	27.8	20.3	8.1	19.5	20.2	17.5	22.3	31.1	25.6	19.1	13.0	19.7	27.9	31.5	20.1	26.0	20.9	22.8
1990	22.9	25.9	18.4	8.0	20.2	20.1	18.1	22.9	32.4	26.6	19.4	14.0	19.7	25.2	29.3	19.7	25.2	20.6	22.0
1991	22.8	25.8	17.3	8.1	20.0	20.0	19.2	23.4	31.8	28.2	20.0	15.8	18.1	23.4	27.3	19.5	24.9	20.3	21.4
1992	22.2	26.4	17.6	8.2	20.8	19.6	20.3	24.4	32.5	27.7	21.1	17.4	17.3	22.6	25.3	19.2	23.6	20.5	21.2
1993	24.6	28.2	17.1	8.6	19.9	19.1	21.2	27.3	38.7	29.1	21.0	15.6	16.3	23.3	24.7	19.5	21.7	20.7	21.3
1994	25.2	29.7	16.6	10.1	19.2	19.5	22.3	25.2	36.0	27.8	18.4	15.5	18.7	24.7	25.1	20.1	21.1	20.1	21.0
1995	25.8	29.0	17.1	10.8	18.7	20.0	19.5	24.7	35.9	27.1	19.5	16.1	20.8	26.3	26.7	20.6	21.1	20.2	21.3
1996	25.9	29.8	18.6	10.4	19.1	20.9	20.2	25.1	37.3	28.5	21.5	17.8	23.2	28.3	27.1	21.0	21.1	21.4	22.4
1997	26.9	29.8	18.3	11.7	20.4	21.9	20.5	26.4	35.5	28.8	22.1	18.6	24.4	29.1	28.6	21.4	20.8	22.0	23.3
1998	27.2	30.0	18.5	14.5	20.7	23.0	19.6	24.2	35.6	29.6	22.6	18.2	25.7	29.6	30.0	22.1	21.0	22.0	23.6
1999	26.9	30.6	19.1	14.1	20.9	24.3	19.9	25.1	35.3	30.6	22.3	20.3	25.6	29.1	30.6	22.6	17.5	22.8	24.3
2000	26.9	30.3	19.1	13.4	20.9	23.6	19.0	24.3	34.9	29.7	21.3	20.8	25.8	28.5	30.2	22.6	17.2	22.4	24.0
2001	26.4	30.3	17.6	13.1	21.0	23.4	18.8	24.3	33.8	28.1	20.7	21.3	25.6	28.2	29.8	22.8	17.2	21.8	23.5

**Table BI.14. IMPLICIT TAX RATES ON CAPITAL (NET) –KITN-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	25.0	39.3	23.9	7.3	7.1	19.8	19.0	12.1	20.3	30.5	20.6	8.3	21.8	37.5	48.2	34.0	18.2	19.6	25.3
1971	26.9	41.9	24.7	7.8	7.8	18.9	19.9	13.1	25.6	34.4	21.5	7.9	23.9	38.6	44.6	31.2	20.6	20.4	25.4
1972	28.2	39.5	24.5	7.6	8.0	19.3	18.2	14.5	24.1	34.7	21.9	7.5	24.1	38.0	41.4	33.7	20.7	20.8	24.9
1973	30.6	40.6	28.2	6.5	8.4	19.9	17.7	13.4	24.5	35.2	22.4	7.4	25.4	34.7	40.5	33.1	23.3	22.2	25.5
1974	32.6	46.1	29.6	8.5	8.4	22.2	21.8	11.9	27.2	38.0	23.7	7.7	25.4	37.1	54.6	34.8	29.3	23.4	28.3
1975	37.4	44.3	28.6	7.5	9.4	23.2	18.9	13.9	52.3	44.1	24.9	8.7	29.7	40.1	54.3	31.2	26.7	24.4	29.3
1976	36.4	43.4	29.7	9.4	9.6	27.0	21.4	17.3	42.5	40.6	23.3	8.5	37.1	45.2	48.1	32.5	25.4	26.3	30.0
1977	39.3	43.6	32.5	8.5	9.8	26.6	18.3	19.0	59.8	42.4	24.4	8.5	34.8	49.9	43.2	33.2	27.1	27.7	30.7
1978	40.8	45.8	30.8	8.6	10.3	25.6	16.9	21.3	57.8	43.4	29.4	7.9	30.2	48.7	42.6	32.8	26.4	27.5	30.4
1979	41.7	47.8	30.3	8.6	11.5	27.4	18.5	25.7	49.9	44.8	28.2	8.3	27.1	46.0	44.0	32.3	28.6	28.4	31.3
1980	39.6	50.7	31.8	9.2	12.7	31.6	22.7	22.2	53.2	45.8	29.1	8.5	29.4	43.2	52.2	32.4	31.0	29.4	33.6
1981	39.7	48.9	31.3	8.0	13.4	33.1	23.3	25.1	56.7	45.2	31.0	9.8	33.9	44.3	58.2	31.0	33.2	30.2	35.5
1982	41.0	45.1	31.4	10.7	12.2	34.9	23.3	28.0	51.9	46.2	28.7	10.9	32.7	43.6	55.7	30.1	33.9	31.0	35.5
1983	41.3	48.8	30.6	10.7	16.8	34.4	23.7	28.8	58.1	44.9	27.8	12.5	32.4	44.8	51.3	27.0	35.4	31.2	35.0
1984	41.6	51.8	31.5	10.6	17.1	35.0	23.6	28.8	52.3	40.8	30.1	12.2	33.2	43.5	52.2	26.8	36.1	31.4	35.3
1985	40.8	53.5	33.0	10.3	18.0	34.0	22.4	29.0	57.9	38.8	31.7	12.2	35.7	44.6	51.9	27.2	36.1	31.6	35.6
1986	40.5	59.1	31.8	10.9	20.0	32.6	24.0	28.7	48.4	40.5	31.3	10.2	38.1	49.1	49.1	27.6	35.8	31.2	34.8
1987	40.7	60.9	31.8	10.8	23.4	32.9	24.4	30.1	54.6	46.8	30.6	9.4	35.8	57.6	47.7	29.8	39.6	32.1	35.6
1988	39.3	62.7	31.0	10.8	23.4	32.3	25.6	29.6	50.5	46.7	30.9	11.1	39.0	55.4	48.3	29.7	39.9	31.5	35.4
1989	35.9	58.9	31.7	9.5	26.9	31.9	22.6	31.5	50.9	42.2	30.0	14.7	39.6	58.1	51.5	29.7	41.0	31.9	36.2
1990	35.9	52.8	28.4	9.5	28.0	32.2	23.2	32.6	57.2	43.3	29.9	16.0	43.9	58.6	48.6	29.1	40.0	31.5	35.2
1991	36.4	52.2	29.1	9.6	27.8	32.4	25.1	33.6	60.4	46.3	31.0	18.3	51.4	53.5	46.2	29.1	40.3	32.2	35.1
1992	35.8	52.3	30.6	9.7	29.0	31.8	26.7	35.3	61.7	46.6	33.3	20.3	45.0	47.0	40.5	28.7	39.5	32.9	34.5
1993	39.6	55.8	30.9	10.1	28.0	31.1	27.7	40.0	69.8	49.7	34.3	18.2	36.6	46.8	38.4	28.8	37.1	33.8	34.9
1994	40.5	53.9	29.1	12.0	26.7	31.4	29.6	36.4	60.4	45.5	30.3	17.9	38.0	43.8	38.0	29.7	37.1	32.2	33.5
1995	41.0	52.9	29.6	12.8	25.7	31.9	25.3	35.1	61.7	44.5	31.9	18.7	38.7	43.3	40.5	30.3	37.8	32.1	33.7
1996	42.4	54.1	32.2	12.4	26.2	33.8	26.1	35.3	64.7	47.1	34.5	20.6	42.7	49.5	40.7	30.5	37.4	34.0	35.4
1997	44.2	55.8	31.2	14.2	28.0	35.2	26.2	37.4	56.1	46.6	35.6	21.6	42.7	51.8	42.4	31.1	37.0	34.5	36.4
1998	44.9	56.3	30.9	17.9	28.6	37.0	25.1	34.6	54.8	47.9	36.5	21.0	43.6	54.7	44.8	32.5	39.1	34.5	37.0
1999	44.8	57.3	32.2	17.4	29.0	39.4	25.4	36.1	54.9	50.2	36.6	23.6	43.9	57.3	46.0	33.6	32.2	35.9	38.4
2000	43.9	55.3	31.7	16.6	29.3	37.3	24.3	34.8	53.9	48.3	34.7	24.4	43.8	51.4	45.1	33.4	31.5	34.9	37.4
2001	42.6	54.5	28.7	16.2	29.7	36.9	23.9	34.4	51.4	45.1	33.6	25.0	42.8	48.9	45.0	33.9	31.6	33.5	36.3

## **APPENDIX B II**

### **DETAILED TABLES FOR AUXILIARY TRANSFORMATIONS**

**Table BII.1. SSC PAID BY THE EMPLOYERS (% TOTAL NWLC) –SERR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	64.4	25.2	52.1	38.0	80.1	70.9	54.4	80.5	51.7	47.0	35.5	59.2	62.3	73.1	38.9	52.7	51.9	64.2	59.3
1971	65.3	23.6	51.8	38.6	78.4	70.7	51.7	80.5	52.4	46.8	35.5	59.0	78.6	71.9	43.2	53.0	52.0	64.0	59.7
1972	65.7	26.3	52.1	39.8	79.1	69.5	49.4	80.5	52.5	45.7	35.5	59.7	81.2	71.4	45.5	53.3	52.0	63.7	60.1
1973	64.9	44.4	52.3	40.4	79.6	69.0	54.0	80.5	52.4	47.0	35.4	60.2	83.8	64.3	52.3	54.0	52.3	63.5	61.2
1974	64.9	58.7	52.5	40.6	80.4	69.3	57.3	80.8	53.0	46.9	36.4	59.6	83.3	65.8	56.1	53.9	52.1	63.8	62.4
1975	64.2	53.2	52.6	40.5	80.8	69.0	59.8	80.3	53.2	45.9	38.1	56.1	83.2	76.9	59.6	53.2	52.1	64.0	63.4
1976	64.5	46.4	52.6	41.1	81.8	67.8	60.9	78.9	53.0	45.8	38.0	54.9	82.5	79.1	60.3	53.8	51.9	63.3	62.9
1977	64.3	44.0	52.5	42.6	80.7	67.1	61.3	78.5	53.1	45.9	38.2	55.9	83.8	78.9	55.1	54.9	51.5	62.7	61.7
1978	64.1	39.9	52.6	43.5	80.2	66.4	63.4	78.1	52.8	45.3	40.3	56.9	83.5	85.0	52.0	55.4	51.2	62.5	61.2
1979	63.6	35.2	52.7	42.2	79.8	64.3	64.7	63.2	53.0	45.5	40.4	56.2	91.7	88.0	48.2	55.2	50.8	60.1	58.7
1980	63.7	40.7	53.5	41.5	77.8	63.3	64.7	73.4	53.7	46.8	40.4	55.1	95.1	88.0	47.9	54.5	51.0	62.0	60.0
1981	61.0	48.4	53.8	41.5	79.0	63.6	65.2	73.4	52.8	44.9	41.9	56.0	94.0	88.5	45.7	53.9	51.1	62.3	60.0
1982	57.2	48.0	53.8	39.6	76.8	62.9	60.5	70.6	48.7	42.3	41.7	54.9	94.9	88.3	43.5	53.2	51.0	61.1	58.6
1983	56.5	47.6	53.3	39.4	74.2	62.4	55.7	70.2	46.9	39.6	41.9	53.8	95.2	83.4	47.8	54.3	51.0	60.2	58.4
1984	57.1	45.3	52.5	40.8	75.6	61.1	54.2	69.6	48.2	39.7	42.7	52.1	94.0	82.2	51.1	55.4	51.1	59.9	58.8
1985	59.3	38.4	51.8	40.3	75.2	61.8	55.1	70.2	48.1	40.0	42.4	52.4	92.9	83.1	51.2	54.5	51.0	60.2	58.8
1986	60.3	33.4	51.4	39.7	70.5	61.2	57.2	69.7	47.9	41.6	41.9	65.8	95.2	82.7	52.3	53.6	51.6	59.7	58.6
1987	60.8	41.0	51.2	41.8	71.4	60.5	57.8	69.2	48.9	39.6	41.8	63.0	94.9	83.1	52.6	53.3	51.7	59.3	58.6
1988	61.6	19.7	51.0	43.2	72.5	60.3	54.7	69.3	48.9	38.6	41.8	61.4	95.4	87.1	53.3	52.5	52.0	59.5	58.5
1989	61.3	16.7	50.9	47.4	71.8	59.3	55.1	70.7	48.8	38.4	41.7	60.4	95.1	87.2	54.7	52.3	52.3	59.8	59.0
1990	63.8	18.7	50.8	48.7	71.9	59.2	55.6	71.0	48.7	20.1	41.7	59.9	95.0	87.7	58.3	51.9	51.8	58.8	58.9
1991	64.3	18.0	51.4	49.2	71.4	59.3	55.8	69.5	48.4	19.8	41.7	59.6	94.9	86.4	58.7	51.4	51.7	58.4	58.5
1992	63.2	16.9	50.9	48.8	71.5	59.6	54.6	68.9	48.6	18.9	41.9	59.4	94.7	88.2	58.6	51.9	51.7	57.7	57.9
1993	62.3	15.1	50.8	48.4	69.1	59.2	53.4	65.8	48.3	18.5	41.8	59.6	85.0	89.2	58.9	52.7	51.9	55.9	56.3
1994	61.9	17.6	51.0	47.5	68.7	58.7	53.5	65.8	46.8	14.5	40.8	57.2	81.1	86.5	55.5	52.3	51.4	55.3	55.3
1995	61.4	17.3	50.6	47.0	69.1	58.2	56.7	65.3	46.1	16.0	41.4	57.1	80.1	79.7	54.7	52.0	51.2	54.9	54.7
1996	61.1	18.4	50.2	46.7	69.5	57.4	55.9	69.1	45.8	16.5	41.5	56.1	79.5	77.4	55.1	52.0	51.0	55.6	55.3
1997	61.2	18.8	50.1	44.5	70.1	58.7	58.3	70.0	45.2	15.1	41.5	56.3	78.9	73.3	54.1	51.8	51.0	56.2	55.4
1998	61.2	17.2	49.8	44.5	68.2	63.7	55.4	72.2	43.9	17.9	40.7	54.3	77.9	67.3	52.3	51.8	51.0	57.5	55.9
1999	61.2	17.2	49.8	44.5	68.2	63.7	55.4	72.2	43.9	17.9	40.7	54.3	77.9	67.3	52.3	51.8	51.0	57.5	55.9
2000	61.2	17.2	49.8	44.5	68.2	63.7	55.4	72.2	43.9	17.9	40.7	54.3	77.9	67.3	52.3	51.8	51.0	57.5	55.8
2001	61.2	17.2	49.8	44.5	68.2	63.7	55.4	72.2	43.9	17.9	40.7	54.3	77.9	67.3	52.3	51.8	51.0	57.4	55.8



**Table BII.2. SSC PAID BY THE EMPLOYEES (% TOTAL NWLC) –SEMR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	29.4	74.8	44.0	42.2	19.9	18.4	45.6	19.5	38.6	43.6	34.0	36.3	4.3	12.3	33.6	43.0	38.3	29.5	30.5
1971	28.8	76.4	44.2	42.3	21.6	18.7	48.3	19.5	38.2	43.5	34.0	36.5	4.7	10.4	36.8	42.9	38.0	30.0	31.4
1972	27.9	73.7	43.6	42.2	20.9	19.8	49.0	19.5	38.9	44.2	34.2	34.4	4.1	11.1	39.1	42.8	37.9	30.0	31.7
1973	28.4	55.6	43.2	41.9	20.4	20.4	44.7	19.5	38.7	43.4	34.0	34.1	3.4	10.0	43.1	42.3	38.1	30.2	31.9
1974	28.7	41.3	42.9	41.6	19.6	20.3	41.8	19.2	38.6	43.0	33.7	34.5	3.3	11.4	40.0	42.2	38.1	29.9	30.9
1975	28.1	46.8	42.7	40.8	19.2	20.2	39.6	19.7	37.2	42.7	32.4	36.0	3.3	0.0	37.5	42.8	37.1	29.3	29.7
1976	28.2	53.6	43.1	39.4	18.2	21.2	38.6	16.3	38.0	42.9	32.7	36.3	3.6	0.0	37.0	42.4	37.3	29.3	29.7
1977	28.3	56.0	43.2	38.9	19.3	21.4	37.9	16.8	37.8	42.3	32.5	34.8	3.9	0.0	34.1	41.4	36.7	29.8	29.8
1978	27.7	60.1	43.4	39.8	19.8	21.5	36.0	16.8	38.0	42.5	32.9	34.4	4.3	0.0	31.6	41.1	35.8	30.0	29.9
1979	28.2	64.8	43.5	39.2	20.2	23.7	35.0	16.4	38.3	42.5	33.0	34.6	4.1	0.0	30.0	41.2	35.4	30.3	30.0
1980	28.5	59.3	44.2	41.8	22.2	24.8	32.5	17.9	38.5	41.4	33.6	35.1	0.4	0.3	30.5	42.0	35.2	30.6	30.2
1981	30.2	51.6	44.5	41.7	20.6	24.1	33.1	17.9	39.4	41.9	33.8	35.2	0.5	0.3	33.9	42.8	35.3	30.2	30.2
1982	34.2	52.0	44.5	40.8	21.9	24.7	34.0	18.8	36.6	43.0	34.1	35.1	0.5	0.3	37.3	42.9	35.3	30.8	31.4
1983	35.1	52.4	44.1	40.6	19.9	25.0	32.5	19.4	36.6	43.9	34.2	35.7	0.4	0.4	42.7	42.5	35.2	30.9	32.3
1984	34.8	43.5	43.7	42.6	17.3	26.1	30.7	19.6	35.8	42.5	34.4	36.1	0.4	0.4	46.2	41.0	35.3	30.5	32.3
1985	32.0	43.5	43.3	42.7	17.7	26.0	30.7	19.2	36.2	44.6	35.1	35.7	0.4	0.4	45.7	41.7	35.6	30.2	32.1
1986	31.3	51.8	43.2	42.9	17.8	26.6	31.6	19.1	36.4	44.0	35.5	30.4	0.3	0.4	47.7	42.3	36.3	30.3	32.4
1987	31.1	43.9	43.1	43.8	16.7	27.4	33.2	19.1	37.2	43.9	35.5	33.1	0.3	0.4	44.6	42.2	35.9	30.4	31.9
1988	30.3	70.5	43.2	43.3	16.1	27.7	33.4	19.5	37.4	44.1	35.7	34.7	0.2	0.4	43.6	42.3	35.8	30.3	32.3
1989	31.1	65.9	43.1	39.3	16.3	28.6	32.7	19.0	37.8	44.7	35.8	35.9	0.3	0.4	42.1	42.7	36.2	30.1	31.7
1990	29.8	64.0	43.2	48.9	16.3	28.8	32.1	19.0	38.3	61.7	35.7	36.5	0.3	0.4	38.3	42.6	37.8	31.1	32.0
1991	28.7	64.2	43.7	49.1	16.0	28.5	31.9	19.7	38.9	61.9	35.8	36.9	0.2	0.4	37.9	42.4	38.0	31.8	32.4
1992	28.6	66.5	43.8	49.0	15.6	28.3	32.8	19.7	38.6	62.5	36.2	37.1	0.2	0.6	37.9	42.5	38.0	32.2	32.8
1993	29.5	59.8	43.7	49.6	16.9	28.6	30.6	20.7	38.4	62.2	36.5	36.8	10.4	4.0	37.3	42.7	37.8	33.5	33.9
1994	29.6	68.1	43.3	50.1	17.2	29.3	31.1	21.0	39.1	64.8	36.5	38.0	14.6	6.7	41.0	42.6	38.4	34.0	35.1
1995	29.8	70.0	43.2	50.4	16.9	29.4	30.6	20.9	40.0	63.5	35.9	37.5	15.9	11.3	41.8	42.6	39.0	34.1	35.4
1996	30.0	69.5	43.2	50.7	17.1	29.7	30.5	19.8	40.8	63.9	35.7	37.3	16.3	13.3	41.1	42.9	39.0	33.6	35.0
1997	29.9	65.5	43.5	53.3	16.0	28.5	27.8	19.7	41.6	64.7	35.1	36.8	17.0	15.3	42.3	43.2	39.0	33.1	35.0
1998	29.9	61.9	43.6	53.3	16.9	24.0	30.6	19.5	42.7	60.1	35.6	38.5	17.7	17.2	44.3	43.2	39.0	32.0	34.5
1999	29.9	61.9	43.6	53.3	16.9	24.0	30.6	19.5	42.7	60.1	35.6	38.5	17.7	17.2	44.3	43.2	39.0	32.0	34.6
2000	29.9	61.9	43.6	53.3	16.9	24.0	30.6	19.5	42.7	60.1	35.6	38.5	17.7	17.2	44.3	43.2	39.0	31.9	34.7
2001	29.9	61.9	43.6	53.3	16.9	24.0	30.6	19.5	42.7	60.1	35.6	38.5	17.7	17.2	44.3	43.2	39.0	31.9	34.7

**Table BII.3. SSC PAID BY THE SELF-EMPLOYED (% TOTAL NWLC) –SSER-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	6.2	0.0	1.9	0.0	0.0	7.5	0.0	0.0	6.4	9.4	7.3	0.6	0.0	7.7	3.3	4.4	9.8	3.6	3.6
1971	5.9	0.0	1.7	0.0	0.0	7.3	0.0	0.0	5.8	9.6	7.2	0.5	0.0	4.9	3.6	4.1	10.0	3.5	3.4
1972	6.5	0.0	1.9	0.0	0.0	7.2	1.6	0.0	5.2	10.2	7.0	0.6	0.0	4.3	3.8	3.9	10.2	3.6	3.5
1973	6.6	0.0	2.1	0.0	0.0	6.6	1.2	0.0	5.2	9.6	7.2	0.5	0.0	3.8	4.3	3.7	9.6	3.5	3.5
1974	6.4	0.0	2.3	0.0	0.0	6.4	0.9	0.0	4.8	10.2	6.8	0.4	0.0	4.3	3.9	4.0	9.9	3.5	3.5
1975	7.6	0.0	2.4	0.0	0.0	6.2	0.6	0.0	6.2	11.4	6.9	1.2	0.0	4.9	2.9	4.0	10.7	3.7	3.5
1976	7.3	0.0	2.1	0.0	0.0	6.3	0.5	4.8	6.2	11.3	7.0	1.5	0.0	3.8	2.7	3.8	10.7	4.4	4.0
1977	7.4	0.0	2.1	0.0	0.0	6.5	0.8	4.7	6.2	11.8	7.3	1.8	0.0	3.8	2.7	3.7	11.8	4.5	4.1
1978	8.2	0.0	2.0	0.0	0.0	6.7	0.7	5.1	6.3	12.2	7.6	1.5	0.0	3.8	2.7	3.5	13.0	4.7	4.2
1979	8.2	0.0	1.9	0.0	0.0	7.1	0.3	4.9	5.9	12.0	7.6	1.6	0.0	4.0	1.8	3.6	13.8	4.7	4.1
1980	7.7	0.0	1.9	0.0	0.0	7.0	1.3	7.1	5.6	11.9	7.5	1.7	3.6	3.4	1.8	3.6	13.9	5.1	4.3
1981	8.9	0.0	1.7	0.0	0.0	7.3	1.1	6.8	5.6	13.2	7.2	1.6	5.2	3.2	1.8	3.3	13.5	5.2	4.4
1982	8.6	0.0	1.7	0.0	0.0	7.4	0.6	8.7	12.6	14.7	7.3	2.7	4.6	3.4	2.2	3.9	13.8	5.7	4.8
1983	8.4	0.0	2.7	0.0	6.0	7.6	0.3	8.6	14.5	16.6	7.4	2.8	4.3	3.3	2.5	3.2	13.8	6.6	5.6
1984	8.1	0.0	3.8	0.0	7.1	7.6	0.4	9.0	14.0	17.8	7.4	3.1	4.2	3.4	2.7	3.6	13.6	7.2	6.1
1985	8.8	0.0	4.8	0.0	7.1	7.7	0.5	9.0	13.7	15.3	7.3	2.0	4.0	3.5	3.1	3.9	13.3	7.4	6.3
1986	8.4	0.0	5.4	0.1	7.5	7.7	0.5	9.6	13.7	14.4	7.3	2.3	4.4	3.2	0.0	4.1	12.2	7.6	6.1
1987	8.0	0.0	5.7	0.1	7.3	7.8	0.7	10.1	14.0	16.5	7.4	3.4	4.8	3.1	2.8	4.5	12.5	8.0	6.8
1988	8.1	0.0	5.8	0.1	7.2	7.9	2.4	9.6	13.7	17.4	7.4	3.9	4.4	3.1	3.1	5.2	12.2	8.0	6.8
1989	7.6	0.0	6.0	0.1	6.9	8.0	4.0	8.8	13.4	17.0	7.3	3.7	4.6	3.9	3.2	5.0	11.4	7.8	6.7
1990	6.4	0.0	6.0	0.1	6.8	7.9	4.1	9.0	13.0	18.2	7.1	3.5	4.8	3.6	3.4	5.6	10.3	7.8	6.8
1991	7.0	0.0	4.9	0.1	6.8	8.0	4.2	9.8	12.8	18.3	6.9	3.5	4.8	2.2	3.3	6.2	10.3	7.6	6.6
1992	8.1	0.0	5.3	0.1	6.7	7.4	4.7	10.5	12.8	18.5	6.8	3.5	5.0	2.1	3.5	5.7	10.2	7.7	6.7
1993	8.2	0.0	5.5	0.1	7.0	7.2	4.4	12.6	13.4	19.3	7.0	3.7	4.6	2.3	3.8	4.6	10.2	8.2	7.1
1994	8.5	0.0	5.7	0.1	7.8	6.9	5.1	12.2	14.1	20.7	7.0	4.8	4.3	2.2	3.5	5.1	10.2	8.3	7.2
1995	8.8	0.0	6.2	0.1	8.4	7.0	4.9	12.9	13.9	20.5	7.1	5.4	4.0	2.0	3.5	5.4	9.9	8.6	7.4
1996	8.9	0.0	6.6	0.1	8.7	7.4	5.0	10.7	13.4	19.6	7.4	6.6	4.2	1.5	3.8	5.1	10.0	8.5	7.4
1997	8.9	0.0	6.4	0.1	9.2	7.3	6.0	9.9	13.1	20.2	8.0	6.9	4.2	1.5	3.7	5.0	10.0	8.4	7.2
1998	8.9	0.0	6.6	0.1	9.7	6.1	5.2	7.8	13.4	22.0	8.1	7.2	4.4	1.3	3.4	5.0	10.0	8.0	6.8
1999	8.9	0.0	6.6	0.1	9.7	6.1	5.2	7.8	13.4	22.0	8.1	7.2	4.4	1.3	3.4	5.0	10.0	8.0	6.8
2000	8.9	0.0	6.6	0.1	9.7	6.1	5.2	7.8	13.4	22.0	8.1	7.2	4.4	1.3	3.4	5.0	10.0	8.1	6.7
2001	8.9	0.0	6.6	0.1	9.7	6.1	5.2	7.8	13.4	22.0	8.1	7.2	4.4	1.3	3.4	5.0	10.0	8.1	6.7

**Table BII.4. OTHER SSC (% TOTAL NWLC) –SOTR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	0.0	0.0	0.0	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
1971	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1972	0.0	0.0	0.0	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1973	0.0	0.0	0.0	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1974	0.0	0.0	0.0	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1975	0.0	0.0	0.0	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1976	0.0	0.0	0.0	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1977	0.0	0.0	0.0	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1978	0.0	0.0	0.0	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1979	0.0	0.0	0.0	12.8	0.0	0.0	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.1
1980	0.0	0.0	0.0	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1981	0.0	0.0	0.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1982	0.0	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1983	0.0	0.0	0.0	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1984	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1985	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1986	0.0	0.0	0.0	12.5	4.3	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.4	0.4
1987	0.0	0.0	0.0	10.7	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.4
1988	0.0	0.0	0.0	10.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
1989	0.0	0.0	0.0	8.6	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
1990	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
1991	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	0.5
1992	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
1993	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
1994	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
1995	0.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
1996	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3
1997	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3
1998	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
1999	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
2000	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
2001	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4

**Table BII.5. TAXES ON PAYROLL AND WORKFORCE (% TOTAL NWLC) –TWFR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	0.0	0.0	2.0	2.3	0.0	3.2	0.0	0.0	3.4	0.0	23.3	3.9	33.4	6.9	24.2	0.0	0.0	2.8	6.3
1971	0.0	0.0	2.3	2.4	0.0	3.3	0.0	0.0	3.5	0.0	23.2	4.0	16.8	12.7	16.5	0.0	0.0	2.6	5.2
1972	0.0	0.0	2.4	2.4	0.0	3.5	0.0	0.0	3.5	0.0	23.3	5.2	14.7	13.2	11.6	0.0	0.0	2.7	4.4
1973	0.0	0.0	2.4	2.5	0.0	4.0	0.0	0.0	3.7	0.0	23.3	5.2	12.8	22.0	0.3	0.0	0.0	2.8	3.2
1974	0.0	0.0	2.4	2.7	0.0	4.0	0.0	0.0	3.6	0.0	23.1	5.5	13.3	18.5	0.0	0.0	0.0	2.8	3.0
1975	0.0	0.0	2.3	2.6	0.0	4.6	0.0	0.0	3.3	0.0	22.5	6.8	13.4	18.2	0.0	0.0	0.0	3.0	3.2
1976	0.0	0.0	2.2	3.6	0.0	4.7	0.0	0.0	2.8	0.0	22.3	7.3	13.9	17.0	0.0	0.0	0.0	3.0	3.2
1977	0.0	0.0	2.2	3.3	0.0	5.0	0.0	0.0	2.8	0.0	22.0	7.5	12.3	17.3	8.1	0.0	0.0	3.0	4.2
1978	0.0	0.0	2.0	3.2	0.0	5.3	0.0	0.0	2.8	0.0	19.2	7.2	12.2	11.2	13.6	0.0	0.0	2.9	4.5
1979	0.0	0.0	1.8	5.8	0.0	4.9	0.0	0.0	2.8	0.0	19.0	7.6	4.3	8.1	20.0	0.0	0.0	2.6	5.2
1980	0.0	0.0	0.4	5.3	0.0	4.9	1.5	1.7	2.2	0.0	18.6	8.1	0.9	8.3	19.8	0.0	0.0	2.4	5.3
1981	0.0	0.0	0.0	5.4	0.4	5.0	0.7	1.9	2.2	0.0	17.2	7.2	0.4	8.1	18.6	0.0	0.0	2.3	5.2
1982	0.0	0.0	0.0	4.9	1.3	5.0	4.9	1.8	2.1	0.0	16.9	7.2	0.0	8.0	17.0	0.0	0.0	2.4	5.0
1983	0.0	0.0	0.0	4.9	0.0	5.0	11.5	1.8	2.0	0.0	16.5	7.7	0.0	12.9	7.0	0.0	0.0	2.3	3.4
1984	0.0	11.2	0.0	4.1	0.0	5.1	14.8	1.8	2.0	0.0	15.5	8.7	1.4	14.0	0.0	0.0	0.0	2.4	2.6
1985	0.0	18.1	0.0	4.0	0.0	4.5	13.7	1.6	2.0	0.0	15.2	8.7	2.8	13.0	0.0	0.0	0.0	2.2	2.6
1986	0.0	14.9	0.0	4.8	0.0	4.5	10.7	1.6	2.0	0.0	15.3	0.0	0.0	13.7	0.0	0.0	0.0	2.0	2.5
1987	0.0	15.1	0.0	3.6	0.0	4.3	8.3	1.6	0.0	0.0	15.3	0.0	0.0	13.4	0.0	0.0	0.0	1.9	2.4
1988	0.0	9.7	0.0	3.4	0.0	4.1	9.6	1.6	0.0	0.0	15.1	0.0	0.0	9.5	0.0	0.0	0.0	1.9	2.0
1989	0.0	17.4	0.0	4.6	0.0	4.1	8.2	1.6	0.0	0.0	15.3	0.0	0.0	8.5	0.0	0.0	0.0	1.8	2.2
1990	0.0	17.3	0.0	2.2	0.0	4.1	8.1	1.0	0.0	0.0	15.5	0.0	0.0	8.3	0.0	0.0	0.0	1.7	2.0
1991	0.0	17.8	0.0	1.6	0.0	4.2	8.1	1.0	0.0	0.0	15.6	0.0	0.0	10.6	0.0	0.0	0.0	1.6	2.0
1992	0.0	16.7	0.0	2.1	0.0	4.6	8.0	0.9	0.0	0.0	15.1	0.0	0.0	9.1	0.0	0.0	0.0	1.7	2.0
1993	0.0	25.1	0.0	1.9	0.0	5.0	11.6	0.9	0.0	0.0	14.7	0.0	0.0	4.5	0.0	0.0	0.0	1.9	2.1
1994	0.0	14.4	0.0	2.3	0.0	5.2	10.3	0.9	0.0	0.0	15.7	0.0	0.0	4.6	0.0	0.0	0.0	1.9	2.0
1995	0.0	12.7	0.0	2.4	0.0	5.4	7.7	0.9	0.0	0.0	15.6	0.0	0.0	7.0	0.0	0.0	0.0	2.0	2.1
1996	0.0	12.1	0.0	2.5	0.0	5.6	8.6	0.4	0.0	0.0	15.4	0.0	0.0	7.8	0.0	0.0	0.0	1.9	2.0
1997	0.0	15.7	0.0	2.1	0.0	5.5	7.9	0.4	0.0	0.0	15.4	0.0	0.0	10.0	0.0	0.0	0.0	1.9	2.1
1998	0.0	20.9	0.0	2.1	0.0	6.2	8.9	0.4	0.0	0.0	15.5	0.0	0.0	14.2	0.0	0.0	0.0	2.0	2.4
1999	0.0	20.9	0.0	2.1	0.0	6.2	8.9	0.4	0.0	0.0	15.5	0.0	0.0	14.2	0.0	0.0	0.0	2.1	2.4
2000	0.0	20.9	0.0	2.1	0.0	6.2	8.9	0.4	0.0	0.0	15.5	0.0	0.0	14.2	0.0	0.0	0.0	2.1	2.4
2001	0.0	20.9	0.0	2.1	0.0	6.2	8.9	0.4	0.0	0.0	15.5	0.0	0.0	14.2	0.0	0.0	0.0	2.1	2.4

**Table BII.6. SSC ON EMPLOYED LABOUR (% TOTAL SSC) –SELR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	93.8	100.0	98.1	82.5	100.0	92.5	100.0	100.0	93.6	90.6	92.7	99.4	100.0	92.3	96.7	95.6	90.2	96.4	96.2
1971	94.1	100.0	98.3	83.3	100.0	92.7	100.0	100.0	94.2	90.4	92.8	99.5	100.0	95.1	96.4	95.9	90.0	96.5	96.3
1972	93.5	100.0	98.1	84.3	100.0	92.8	98.4	100.0	94.8	89.8	93.0	99.4	100.0	95.7	96.2	96.1	89.8	96.4	96.3
1973	93.4	100.0	97.9	84.8	100.0	93.4	98.8	100.0	94.8	90.4	92.8	99.5	100.0	96.2	95.7	96.3	90.4	96.5	96.3
1974	93.6	100.0	97.7	84.9	100.0	93.6	99.1	100.0	95.2	89.8	93.2	99.6	100.0	95.7	96.1	96.0	90.1	96.5	96.3
1975	92.4	100.0	97.6	83.9	100.0	93.8	99.4	100.0	93.8	88.6	93.1	98.8	100.0	95.1	97.1	96.0	89.3	96.3	96.2
1976	92.7	100.0	97.9	84.1	100.0	93.7	99.5	95.2	93.8	88.7	93.0	98.5	100.0	96.2	97.3	96.2	89.3	95.6	95.8
1977	92.6	100.0	97.9	84.8	100.0	93.5	99.2	95.3	93.8	88.2	92.7	98.2	100.0	96.2	97.3	96.3	88.2	95.5	95.7
1978	91.8	100.0	98.0	86.5	100.0	93.3	99.3	94.9	93.7	87.8	92.4	98.5	100.0	96.2	97.3	96.5	87.0	95.3	95.6
1979	91.8	100.0	98.1	87.2	100.0	92.9	99.7	79.7	94.1	88.0	92.4	98.4	100.0	96.0	98.2	96.4	86.2	92.9	93.8
1980	92.3	100.0	98.1	88.6	100.0	93.0	98.7	92.9	94.4	88.1	92.5	98.3	96.4	96.6	98.2	96.4	86.1	94.9	95.5
1981	91.1	100.0	98.3	88.7	100.0	92.7	98.9	93.2	94.4	86.8	92.8	98.4	94.8	96.8	98.2	96.7	86.5	94.8	95.4
1982	91.4	100.0	98.3	85.2	100.0	92.6	99.4	91.3	87.4	85.3	92.7	97.3	95.4	96.6	97.8	96.1	86.2	94.3	94.9
1983	91.6	100.0	97.3	84.8	94.0	92.4	99.7	91.4	85.5	83.4	92.6	97.2	95.7	96.7	97.5	96.8	86.2	93.4	94.2
1984	91.9	100.0	96.2	87.5	92.9	92.4	99.6	91.0	86.0	82.2	92.6	96.9	95.8	96.6	97.3	96.4	86.4	92.8	93.7
1985	91.2	100.0	95.2	87.0	92.9	92.3	99.5	91.0	86.3	84.7	92.7	96.8	96.0	96.5	96.9	96.1	86.7	92.6	93.5
1986	91.6	100.0	94.6	87.4	88.2	92.3	99.5	90.4	86.3	85.6	92.7	96.2	95.6	96.8	100.0	95.9	87.8	92.0	93.5
1987	92.0	100.0	94.3	89.2	88.1	92.2	99.3	89.9	86.0	83.5	92.6	96.2	95.2	96.9	97.2	95.5	87.5	91.7	92.8
1988	91.9	100.0	94.2	89.9	88.6	92.1	97.6	90.4	86.3	82.6	92.6	96.1	95.6	96.9	96.9	94.8	87.8	91.7	92.8
1989	92.4	100.0	94.0	91.3	88.0	92.0	96.0	91.2	86.6	83.0	92.7	96.3	95.4	96.1	96.8	95.0	88.6	91.7	92.9
1990	93.6	100.0	94.0	99.9	88.1	92.1	95.9	91.0	87.0	81.8	92.9	96.5	95.2	96.4	96.6	94.4	89.7	91.7	92.8
1991	93.0	100.0	95.1	99.9	87.4	92.0	95.8	90.2	87.2	81.7	93.1	96.5	95.2	97.4	96.7	93.8	89.7	91.8	93.0
1992	91.9	100.0	94.7	99.9	87.0	92.6	95.3	89.5	87.2	81.5	93.2	96.5	95.0	97.9	96.5	94.3	89.8	91.6	92.8
1993	91.8	100.0	94.5	99.9	86.0	92.8	95.6	87.4	86.6	80.7	93.0	96.3	95.4	97.7	96.2	95.4	89.8	91.2	92.4
1994	91.5	100.0	94.3	99.9	85.8	93.1	94.9	87.8	85.9	79.3	93.0	95.2	95.7	97.8	96.5	94.9	89.8	91.2	92.4
1995	91.2	100.0	93.8	99.9	86.0	93.0	95.1	87.1	86.1	79.5	92.9	94.6	96.0	98.0	96.5	94.6	90.1	91.0	92.2
1996	91.1	100.0	93.4	99.9	86.6	92.6	95.0	89.3	86.6	80.4	92.6	93.4	95.8	98.5	96.2	94.9	90.0	91.1	92.3
1997	91.1	100.0	93.6	99.9	86.2	92.7	94.0	90.1	86.9	79.8	92.0	93.1	95.8	98.5	96.3	95.0	90.0	91.2	92.5
1998	91.1	100.0	93.4	99.9	85.1	93.9	94.8	92.2	86.6	78.0	91.9	92.8	95.6	98.7	96.6	95.0	90.0	91.5	92.9
1999	91.1	100.0	93.4	99.9	85.1	93.9	94.8	92.2	86.6	78.0	91.9	92.8	95.6	98.7	96.6	95.0	90.0	91.5	92.9
2000	91.1	100.0	93.4	99.9	85.1	93.9	94.8	92.2	86.6	78.0	91.9	92.8	95.6	98.7	96.6	95.0	90.0	91.5	92.9
2001	91.1	100.0	93.4	99.9	85.1	93.9	94.8	92.2	86.6	78.0	91.9	92.8	95.6	98.7	96.6	95.0	90.0	91.4	92.9

**Table BII.7. SSC ON EMPLOYED LABOUR (% GDP) –ELRV-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	10.5	2.2	12.1	6.5	7.4	12.6	3.3	11.3	8.0	11.3	10.4	4.5	5.6	8.6	6.1	4.3	3.9	11.3	10.1
1971	11.0	2.2	12.7	6.5	8.2	12.8	3.4	11.8	8.7	11.9	10.7	4.8	6.1	9.3	5.9	4.4	4.1	11.8	10.4
1972	11.2	2.2	13.2	6.6	8.5	13.1	3.5	11.9	8.7	12.0	10.7	5.1	6.0	9.9	6.3	4.6	4.2	12.0	10.8
1973	11.5	1.5	14.0	6.0	8.6	13.1	3.6	11.9	8.4	13.1	10.9	5.3	6.4	9.4	6.3	5.3	4.2	12.5	11.2
1974	11.8	1.3	14.6	6.5	8.7	13.6	4.8	11.8	8.9	13.8	11.3	5.4	6.6	9.5	7.1	5.5	4.6	12.8	11.5
1975	12.7	1.4	15.6	6.6	9.9	15.1	5.6	12.8	11.4	13.9	12.2	7.4	10.6	10.0	7.9	5.3	5.7	13.9	12.5
1976	12.7	1.3	16.2	6.9	10.5	15.5	5.9	12.1	12.0	13.7	12.3	7.3	11.4	12.6	8.2	5.4	5.7	14.2	12.9
1977	12.9	1.4	16.2	7.5	11.3	16.0	5.8	11.9	12.8	13.5	12.6	7.2	11.9	14.1	7.9	5.4	6.0	14.4	13.1
1978	12.7	1.4	16.0	7.8	12.0	16.1	5.6	11.8	12.3	13.7	14.0	6.9	10.8	14.9	7.3	5.6	5.9	14.4	13.1
1979	12.8	1.4	16.0	7.9	12.5	16.7	5.8	10.3	12.0	14.2	13.9	6.7	10.6	14.8	7.2	5.8	6.2	14.4	13.0
1980	12.9	1.6	16.3	8.4	12.7	17.6	6.3	12.2	12.5	14.5	14.3	6.9	10.5	15.3	7.5	5.8	6.3	15.0	13.5
1981	13.1	1.8	16.9	8.6	12.9	17.6	6.3	12.2	12.7	14.7	14.5	7.3	10.5	15.8	7.9	6.1	6.7	15.2	13.6
1982	13.4	2.1	17.3	9.2	12.8	18.1	7.2	12.7	11.4	15.2	14.2	7.7	10.1	15.2	8.0	6.2	6.9	15.5	13.9
1983	13.9	2.5	16.6	9.6	12.3	18.5	7.4	13.0	10.7	16.5	14.0	7.8	9.9	14.9	8.3	6.3	7.0	15.5	14.0
1984	14.6	2.5	16.5	10.1	11.5	18.8	7.4	12.5	10.7	15.5	14.2	7.8	10.1	14.4	8.3	6.4	7.0	15.3	13.8
1985	15.0	2.5	16.5	10.3	11.6	19.0	7.3	12.5	10.5	15.7	14.5	7.4	10.9	14.1	8.1	6.4	7.1	15.4	13.8
1986	15.3	2.2	16.3	10.0	10.9	18.7	7.2	12.7	10.3	15.2	14.6	8.3	10.9	14.3	8.4	6.6	7.3	15.3	13.9
1987	15.6	2.6	16.3	10.3	10.8	18.8	7.1	12.6	10.6	15.5	14.6	8.5	10.9	13.9	7.9	6.6	7.4	15.3	13.8
1988	15.1	2.2	16.2	9.9	10.7	18.6	7.1	12.6	10.7	15.4	14.6	8.1	10.9	14.2	7.8	6.7	7.4	15.1	13.6
1989	14.8	2.2	15.9	10.4	10.9	18.7	6.7	12.9	10.8	14.2	14.6	8.1	11.0	15.1	7.6	6.7	7.3	15.0	13.5
1990	15.1	2.3	15.6	11.7	11.2	18.8	6.8	13.2	11.0	12.6	14.4	8.5	12.3	15.6	7.2	6.7	8.2	14.9	13.5
1991	15.6	2.3	16.4	11.3	11.4	18.9	7.1	13.3	11.3	13.4	14.5	8.9	13.0	15.7	7.4	6.8	8.1	15.3	13.9
1992	15.5	2.4	16.7	11.2	12.1	19.2	7.2	13.5	11.4	13.7	15.1	9.3	13.9	15.1	7.4	6.9	8.3	15.6	14.2
1993	16.0	2.5	17.2	12.1	12.2	19.3	7.3	13.6	11.3	13.6	15.7	9.9	14.4	14.7	7.3	7.0	8.4	16.1	14.5
1994	15.7	2.8	17.5	12.3	11.9	19.1	7.0	13.2	10.7	13.6	16.1	9.5	15.1	14.7	7.3	6.9	8.5	16.1	14.5
1995	15.3	2.6	17.6	12.6	11.2	19.1	6.5	12.9	10.7	13.7	16.2	9.5	14.3	15.0	7.3	6.9	9.3	16.0	14.5
1996	15.3	2.6	18.1	12.9	11.4	19.2	6.0	13.4	10.7	13.3	16.1	9.8	13.7	16.0	7.2	6.8	9.2	16.1	14.6
1997	15.3	2.6	18.3	13.1	11.4	18.7	5.6	13.9	10.3	13.3	15.9	9.8	12.8	15.9	7.2	6.7	9.4	16.1	14.3
1998	15.1	2.6	17.9	13.2	11.2	17.2	5.5	11.9	10.0	12.8	15.8	10.0	12.5	15.9	7.4	6.7	9.8	15.2	13.6
1999	15.0	3.3	17.7	13.7	11.2	17.6	5.9	11.7	10.0	13.3	15.7	11.4	12.5	14.9	7.3	6.8	10.0	15.2	13.6
2000	14.5	3.5	17.3	13.8	11.1	17.3	5.4	11.6	10.0	13.2	15.5	11.7	12.4	16.4	7.2	6.7	10.2	14.9	13.3
2001	14.1	3.5	16.8	13.8	11.1	17.2	5.3	11.5	9.8	11.5	15.3	11.8	12.4	16.5	7.2	6.7	10.2	14.5	13.0

**Table BII.8. SSC PAID BY THE EMPLOYERS (% GDP) –ERRV–**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	7.2	0.6	6.5	3.0	6.0	9.7	1.8	9.1	4.4	5.9	4.0	2.7	3.5	6.8	2.4	2.4	2.2	7.5	6.5
1971	7.6	0.5	6.7	3.0	6.5	9.8	1.8	9.5	4.8	6.2	4.1	2.9	4.8	7.1	2.6	2.4	2.4	7.8	6.7
1972	7.9	0.6	7.0	3.1	6.8	9.8	1.8	9.6	4.8	6.1	4.1	3.1	4.8	7.4	3.0	2.6	2.4	7.9	6.9
1973	8.0	0.7	7.5	2.9	6.9	9.7	2.0	9.6	4.7	6.8	4.2	3.2	5.3	6.3	3.5	3.0	2.4	8.1	7.1
1974	8.2	0.8	7.8	3.1	7.0	10.1	2.8	9.5	4.9	7.2	4.4	3.2	5.5	6.5	4.2	3.1	2.7	8.3	7.4
1975	8.8	0.7	8.4	3.2	8.0	11.1	3.4	10.3	6.5	7.2	5.0	4.2	8.8	8.0	4.8	2.9	3.3	9.1	8.2
1976	8.8	0.6	8.7	3.4	8.6	11.2	3.6	10.0	6.8	7.1	5.0	4.1	9.4	10.3	5.1	3.0	3.3	9.2	8.5
1977	8.9	0.6	8.7	3.8	9.1	11.5	3.6	9.8	7.2	7.0	5.2	4.1	10.0	11.6	4.5	3.1	3.5	9.3	8.5
1978	8.8	0.6	8.6	3.9	9.6	11.5	3.6	9.7	6.9	7.1	6.1	4.0	9.0	13.2	3.9	3.2	3.5	9.3	8.5
1979	8.8	0.5	8.6	3.8	10.0	11.6	3.8	8.1	6.8	7.4	6.1	3.8	9.7	13.6	3.5	3.3	3.7	9.2	8.3
1980	8.9	0.7	8.9	3.9	9.9	12.0	4.1	9.6	7.1	7.7	6.3	3.9	10.4	14.0	3.6	3.3	3.7	9.7	8.6
1981	8.8	0.9	9.2	4.0	10.2	12.1	4.2	9.6	7.1	7.6	6.5	4.2	10.4	14.4	3.7	3.4	4.0	9.8	8.7
1982	8.4	1.0	9.5	4.3	9.8	12.3	4.4	9.8	6.3	7.5	6.4	4.4	10.1	13.9	3.6	3.5	4.1	9.9	8.7
1983	8.6	1.2	9.1	4.4	9.7	12.5	4.1	10.0	5.9	7.8	6.3	4.3	9.8	12.9	4.1	3.5	4.1	9.9	8.8
1984	9.1	1.1	9.0	4.7	9.4	12.5	4.0	9.6	6.0	7.5	6.6	4.2	9.9	12.2	4.3	3.7	4.1	9.7	8.7
1985	9.7	1.0	9.0	4.7	9.4	12.7	4.1	9.6	5.9	7.4	6.6	4.0	10.6	12.1	4.3	3.6	4.2	9.9	8.8
1986	10.1	0.7	8.8	4.5	8.7	12.4	4.1	9.8	5.7	7.4	6.6	5.7	10.9	12.2	4.4	3.7	4.3	9.8	8.8
1987	10.3	1.1	8.9	4.8	8.8	12.3	4.1	9.7	6.0	7.4	6.6	5.5	10.8	11.9	4.3	3.7	4.4	9.7	8.8
1988	10.1	0.4	8.8	4.7	8.8	12.2	4.0	9.6	6.1	7.2	6.6	5.2	10.9	12.8	4.3	3.7	4.4	9.6	8.6
1989	9.8	0.4	8.6	5.4	8.9	12.0	3.8	10.0	6.1	6.6	6.5	5.1	10.9	13.7	4.3	3.7	4.3	9.6	8.7
1990	10.3	0.4	8.4	5.7	9.1	12.1	3.9	10.3	6.1	3.1	6.5	5.3	12.3	14.2	4.4	3.7	4.7	9.5	8.6
1991	10.8	0.4	8.8	5.5	9.3	12.2	4.1	10.3	6.2	3.2	6.5	5.5	13.0	13.9	4.5	3.8	4.7	9.6	8.8
1992	10.7	0.4	9.0	5.5	9.9	12.3	4.1	10.4	6.4	3.2	6.8	5.7	13.8	13.6	4.5	3.8	4.8	9.7	8.9
1993	10.8	0.4	9.3	5.9	9.8	12.3	4.1	10.3	6.3	3.1	7.1	6.1	12.8	13.4	4.5	3.8	4.9	9.8	8.9
1994	10.7	0.5	9.5	5.8	9.5	12.0	4.0	9.9	5.8	2.5	7.1	5.7	12.8	13.0	4.2	3.8	4.9	9.6	8.7
1995	10.3	0.4	9.5	5.9	9.0	11.9	3.9	9.7	5.7	2.8	7.2	5.8	11.9	12.2	4.2	3.8	5.3	9.5	8.6
1996	10.3	0.5	9.7	6.0	9.2	11.9	3.5	10.4	5.6	2.7	7.2	5.9	11.4	12.6	4.1	3.7	5.2	9.7	8.8
1997	10.3	0.5	9.8	5.8	9.3	11.8	3.5	10.8	5.3	2.5	7.2	5.9	10.6	11.8	4.1	3.7	5.3	9.8	8.7
1998	10.2	0.4	9.6	5.9	9.0	11.7	3.2	9.3	5.1	2.9	7.0	5.9	10.2	10.8	4.0	3.7	5.6	9.3	8.3
1999	10.1	0.6	9.4	6.1	9.0	11.9	3.4	9.2	5.0	3.1	7.0	6.7	10.2	10.2	4.0	3.7	5.7	9.3	8.2
2000	9.7	0.6	9.2	6.1	8.9	11.7	3.2	9.1	5.0	3.0	6.9	6.8	10.1	11.2	3.9	3.7	5.8	9.2	8.0
2001	9.5	0.6	9.0	6.1	8.9	11.7	3.1	9.0	5.0	2.6	6.8	6.9	10.1	11.2	3.9	3.7	5.8	9.0	7.9

**Table BII.9. PERSONAL INCOME TAX REVENUES (% DIRECT TAX REVENUES) –TRIIR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	71.1	84.9	71.6	47.1	43.8	54.9	46.3	46.4	47.7	72.8	71.8	74.7	84.1	89.5	59.8	57.2	38.8	60.9	62.3
1971	71.8	86.6	75.3	46.9	44.9	55.6	54.7	47.1	54.8	73.3	73.0	71.7	86.4	90.2	61.6	57.2	42.4	62.8	64.1
1972	72.9	86.6	76.3	37.7	44.8	55.7	54.0	47.9	55.7	75.0	75.1	71.2	86.6	89.9	60.3	56.1	44.0	63.6	64.3
1973	71.5	85.2	76.8	42.7	45.6	53.3	57.6	50.5	51.7	74.0	77.9	69.1	86.7	88.9	60.6	56.4	43.2	63.8	64.6
1974	74.0	86.4	78.6	47.1	46.5	54.0	55.3	62.5	48.5	74.3	77.7	71.7	87.0	91.0	61.3	58.2	39.0	66.8	67.2
1975	76.9	86.2	78.4	40.6	52.3	58.9	63.4	61.3	56.7	72.8	74.4	78.5	88.4	89.4	67.9	57.8	44.6	67.9	68.9
1976	77.7	85.3	77.8	41.4	56.4	57.2	66.0	64.0	52.5	73.8	76.7	84.1	86.2	90.3	69.6	58.0	44.7	68.5	69.6
1977	79.2	85.4	76.7	44.0	59.2	59.4	69.3	66.2	52.3	72.5	77.4	85.1	88.0	91.8	66.3	57.7	43.0	69.5	70.0
1978	80.3	84.8	75.9	45.5	64.0	61.5	71.9	62.6	49.5	72.3	78.7	87.2	86.9	91.6	64.7	59.6	41.6	69.6	69.8
1979	79.8	84.9	75.4	58.7	65.0	60.1	71.7	65.2	52.5	73.4	78.0	88.8	87.1	91.4	62.0	62.6	44.7	69.5	69.4
1980	81.4	85.6	77.2	64.1	67.9	59.9	76.5	66.7	54.8	72.1	78.3	87.8	87.1	92.4	59.0	64.6	44.8	70.3	69.6
1981	82.7	87.2	77.8	65.4	68.4	60.0	76.6	68.5	56.2	70.3	79.3	88.9	86.9	91.4	56.8	67.3	46.2	70.8	69.5
1982	82.3	88.4	77.5	64.7	70.6	59.1	77.7	68.4	55.9	70.3	80.5	89.0	86.6	90.4	55.5	68.9	46.9	70.7	69.1
1983	82.1	86.4	76.8	69.2	70.9	62.2	79.4	69.4	53.3	69.7	79.8	88.0	86.5	88.5	54.9	69.7	46.8	71.5	69.6
1984	81.4	84.2	76.4	73.5	72.1	61.0	81.3	67.4	55.8	69.7	79.5	88.0	86.9	87.9	53.3	66.9	44.5	70.7	68.9
1985	82.8	84.8	75.8	71.9	69.2	59.0	81.3	69.4	51.9	65.0	79.5	87.7	86.9	86.9	51.4	67.5	44.6	70.0	67.9
1986	81.4	81.6	76.0	66.3	65.8	56.7	81.7	67.5	53.2	65.0	80.2	85.3	87.5	83.5	54.2	67.2	44.3	68.8	67.4
1987	80.8	84.0	78.1	63.8	64.8	56.5	82.0	66.6	50.7	63.3	80.4	83.5	86.4	79.0	52.6	66.4	41.3	69.0	67.2
1988	79.4	85.3	77.4	66.7	64.6	54.0	81.7	69.3	48.7	65.5	79.2	86.0	85.4	82.4	52.2	65.0	39.3	68.8	67.0
1989	77.2	85.9	77.5	62.2	62.6	52.6	79.5	68.4	46.8	65.9	75.0	69.9	84.4	84.7	50.7	65.4	41.7	67.6	65.9
1990	79.7	87.7	77.1	58.2	60.3	53.1	76.8	68.1	48.8	68.8	76.9	59.7	84.7	85.3	58.8	66.3	46.7	67.5	67.2
1991	79.8	88.3	79.2	60.0	64.9	58.5	75.5	68.6	48.9	70.7	77.4	60.4	84.8	81.7	61.8	65.3	47.8	70.4	69.8
1992	81.1	88.1	80.7	53.3	67.8	55.2	74.1	65.7	50.9	70.9	76.1	66.2	86.9	84.6	64.4	64.8	47.8	70.1	69.9
1993	79.1	86.1	81.1	52.3	69.2	57.5	72.2	64.9	46.5	70.3	78.0	67.4	92.0	82.7	59.9	64.1	49.6	70.9	69.8
1994	78.7	87.4	82.4	53.8	68.9	56.7	70.4	63.9	46.7	64.1	81.0	66.4	92.1	81.0	59.3	63.3	46.4	70.8	69.6
1995	77.6	87.9	83.2	55.6	68.3	55.1	70.3	64.5	46.3	62.0	80.1	63.3	85.3	79.7	57.4	63.7	44.3	70.6	69.3
1996	76.6	87.0	78.4	56.2	66.5	56.6	68.5	63.2	45.6	55.6	77.2	61.2	82.1	79.0	54.7	64.7	42.1	68.0	66.8
1997	75.0	86.0	77.9	56.5	61.5	55.6	67.9	63.5	43.7	50.8	78.6	57.1	76.2	77.6	51.9	65.9	44.3	66.7	64.9
1998	75.0	84.7	78.8	53.3	61.0	61.9	66.1	57.7	40.7	49.5	77.3	57.3	74.0	78.6	56.1	65.9	38.7	67.0	65.7
1999	75.0	84.7	78.8	53.3	61.0	61.9	66.1	57.7	40.7	49.5	77.3	57.3	74.0	78.6	56.1	65.9	38.7	67.0	65.6
2000	75.0	84.7	78.8	53.3	61.0	61.9	66.1	57.7	40.7	49.5	77.3	57.3	74.0	78.6	56.1	65.9	38.7	66.9	65.4
2001	75.0	84.7	78.8	53.3	61.0	61.9	66.1	57.7	40.7	49.5	77.3	57.3	74.0	78.6	56.1	65.9	38.7	66.8	65.4



**Table BII.10. CORPORATE INCOME TAX REVENUES (% DIRECT TAX REVENUES) –TRCIR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	20.0	4.6	15.2	7.9	31.2	28.9	22.4	28.0	39.3	18.2	15.3	0.0	11.1	7.9	16.5	20.7	47.5	22.4	20.2
1971	20.4	3.9	12.4	8.8	31.2	27.9	14.6	28.1	32.2	18.9	14.9	0.0	9.1	7.2	14.0	17.6	42.4	21.0	18.7
1972	19.7	3.8	12.5	16.7	29.5	27.7	13.4	28.3	29.8	17.8	13.9	0.0	9.1	7.7	12.4	18.7	40.4	20.8	18.5
1973	21.1	5.1	13.4	13.9	29.1	28.1	13.6	29.5	34.6	18.3	11.7	0.0	8.8	8.6	14.7	19.4	43.1	21.3	19.4
1974	19.4	4.9	12.2	18.0	28.5	36.0	17.0	21.8	40.8	18.1	13.1	0.0	8.6	6.9	16.8	18.8	47.5	21.4	19.8
1975	17.5	4.8	11.6	15.4	24.9	24.8	12.2	25.5	32.9	20.8	15.0	0.0	7.7	8.4	10.5	19.0	38.5	19.1	17.1
1976	16.1	6.1	11.9	14.6	23.4	26.4	11.3	24.2	36.6	19.0	12.3	0.0	8.1	7.5	8.8	18.1	38.6	19.0	16.8
1977	14.7	5.1	13.5	13.7	21.3	25.6	10.3	22.8	37.4	18.6	12.2	0.0	7.6	6.3	11.3	19.9	39.8	18.7	16.9
1978	13.7	5.2	14.7	12.8	17.9	22.7	12.6	27.1	41.0	17.1	11.1	0.0	8.4	6.6	12.9	19.7	42.3	18.6	17.0
1979	14.0	5.2	15.7	16.2	17.4	23.1	13.7	23.7	36.3	16.1	11.9	0.0	8.3	6.6	14.5	19.3	39.1	18.5	17.2
1980	13.1	5.3	14.2	16.2	16.9	23.8	10.9	22.5	33.8	18.1	11.9	0.0	8.7	5.5	16.9	17.8	40.2	18.2	17.2
1981	12.6	4.6	13.5	17.0	17.0	23.5	12.2	22.4	32.0	19.9	11.1	0.0	9.0	6.6	17.6	15.4	37.7	18.0	17.2
1982	13.8	4.3	13.7	17.5	15.8	24.1	12.3	23.5	31.8	19.9	10.1	0.0	8.7	7.4	19.3	12.7	36.6	18.4	17.8
1983	13.7	4.9	14.0	13.0	16.5	21.0	10.2	23.5	34.6	19.9	10.5	0.0	8.4	7.7	20.9	10.4	35.9	17.7	17.6
1984	14.5	8.9	14.7	13.0	15.9	19.7	8.6	25.3	32.2	19.2	11.3	0.0	7.7	8.4	22.9	13.6	38.4	17.9	18.1
1985	13.0	8.1	16.2	14.1	18.4	20.5	8.4	24.0	36.9	23.3	12.0	0.0	7.4	7.8	24.9	13.4	37.9	18.8	19.1
1986	13.9	10.5	15.9	20.0	21.1	22.1	8.8	25.7	34.3	23.5	11.7	0.0	6.7	10.4	20.7	13.2	36.5	19.6	19.3
1987	13.8	7.4	13.6	22.9	20.4	22.6	7.7	26.8	35.3	25.0	11.6	0.0	7.3	8.8	20.8	14.9	39.4	19.3	18.9
1988	14.8	6.9	14.2	19.0	19.6	23.6	8.9	24.2	35.5	23.4	11.7	0.0	7.7	11.0	21.7	15.7	41.9	19.1	19.0
1989	15.9	6.9	14.5	21.7	23.6	24.6	8.4	25.8	36.2	22.3	14.9	22.5	8.0	8.1	24.6	15.6	41.1	20.5	20.4
1990	13.7	5.3	13.5	22.7	24.5	23.9	11.9	26.0	33.7	21.0	13.1	30.0	10.1	6.9	24.4	13.6	37.6	20.2	20.1
1991	13.8	5.5	12.5	21.6	21.4	19.3	13.7	24.9	34.3	19.6	12.8	30.4	10.1	8.5	20.3	13.7	35.6	18.1	17.9
1992	12.4	5.4	11.5	23.9	18.4	20.2	15.8	25.7	30.8	18.8	14.3	26.3	8.2	6.9	17.9	13.6	32.4	17.6	17.1
1993	13.9	7.1	10.8	27.9	16.4	20.0	18.4	22.1	36.1	19.3	12.7	24.3	1.2	10.1	16.1	14.6	28.9	16.2	16.0
1994	14.5	6.6	9.0	29.1	14.4	19.8	19.6	22.4	36.8	23.0	12.6	25.1	2.1	11.9	17.5	15.9	30.1	15.6	15.8
1995	16.3	6.5	8.4	29.2	15.7	20.6	19.4	21.5	38.1	24.5	14.1	28.1	9.3	13.9	20.0	16.5	31.6	15.8	16.3
1996	16.8	7.6	12.0	28.5	17.1	21.8	21.0	23.2	38.6	30.3	17.5	30.7	12.8	12.6	22.6	16.4	34.3	18.5	18.8
1997	18.1	8.5	13.1	27.2	22.0	23.2	21.6	23.8	39.7	34.2	16.6	35.0	18.5	13.6	25.4	15.9	32.5	20.2	20.7
1998	18.1	9.3	13.7	32.7	21.4	20.0	22.9	28.0	41.1	34.5	18.1	33.2	20.6	13.2	22.3	15.9	26.4	20.6	20.6
1999	18.1	9.3	13.7	32.7	21.4	20.0	22.9	28.0	41.1	34.5	18.1	33.2	20.6	13.2	22.3	15.9	26.4	20.6	20.6
2000	18.1	9.3	13.7	32.7	21.4	20.0	22.9	28.0	41.1	34.5	18.1	33.2	20.6	13.2	22.3	15.9	26.4	20.7	20.7
2001	18.1	9.3	13.7	32.7	21.4	20.0	22.9	28.0	41.1	34.5	18.1	33.2	20.6	13.2	22.3	15.9	26.4	20.7	20.7

**Table BII.11. PROPERTY INCOME TAX REVENUES (% DIRECT TAX REVENUES) –PROPR-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	8.9	10.4	13.2	45.0	24.9	16.3	31.2	25.6	13.0	9.1	13.0	25.3	4.8	2.6	23.7	22.1	13.7	16.8	17.5
1971	7.8	9.5	12.4	44.3	23.9	16.6	30.7	24.8	13.0	7.8	12.1	28.3	4.4	2.6	24.5	25.1	15.2	16.1	17.2
1972	7.4	9.6	11.1	45.6	25.7	16.7	32.6	23.8	14.5	7.1	10.9	28.8	4.4	2.4	27.4	25.2	15.6	15.6	17.1
1973	7.4	9.8	9.9	43.3	25.3	18.6	28.8	20.0	13.7	7.7	10.4	30.9	4.6	2.5	24.7	24.3	13.7	14.9	16.0
1974	6.6	8.7	9.2	34.9	25.0	10.1	27.8	15.7	10.7	7.6	9.3	28.3	4.4	2.0	21.8	23.0	13.5	11.8	13.0
1975	5.6	9.0	10.1	44.0	22.8	16.3	24.4	13.3	10.4	6.4	10.7	21.5	3.9	2.2	21.6	23.3	16.9	12.9	14.0
1976	6.1	8.6	10.3	43.9	20.2	16.5	22.7	11.8	11.0	7.2	11.0	15.9	5.7	2.2	21.7	23.9	16.7	12.6	13.6
1977	6.1	9.5	9.7	42.3	19.5	15.0	20.4	11.0	10.3	8.9	10.4	14.9	4.4	2.0	22.5	22.4	17.2	11.8	13.1
1978	6.0	10.1	9.4	41.7	18.0	15.7	15.5	10.3	9.6	10.6	10.2	12.8	4.7	1.8	22.4	20.7	16.1	11.7	13.2
1979	6.2	9.9	8.8	25.1	17.6	16.8	14.6	11.0	11.3	10.5	10.1	11.2	4.6	2.0	23.5	18.0	16.2	12.0	13.4
1980	5.4	9.1	8.5	19.8	15.2	16.3	12.6	10.8	11.3	9.8	9.7	12.2	4.2	2.1	24.1	17.6	15.1	11.4	13.1
1981	4.7	8.2	8.7	17.6	14.6	16.5	11.1	9.1	11.8	9.8	9.6	11.1	4.1	2.0	25.6	17.2	16.1	11.2	13.3
1982	3.9	7.3	8.8	17.8	13.6	16.7	10.0	8.1	12.3	9.8	9.4	11.0	4.8	2.2	25.3	18.4	16.6	10.9	13.0
1983	4.2	8.8	9.2	17.7	12.6	16.8	10.4	7.1	12.1	10.4	9.7	12.0	5.1	3.8	24.2	19.9	17.2	10.8	12.8
1984	4.1	6.9	8.9	13.5	12.0	19.4	10.1	7.3	12.0	11.1	9.3	12.0	5.4	3.7	23.8	19.5	17.1	11.3	13.0
1985	4.3	7.1	8.0	14.0	12.4	20.4	10.4	6.5	11.2	11.6	8.5	12.3	5.7	5.3	23.7	19.0	17.5	11.3	13.0
1986	4.8	7.9	8.1	13.7	13.1	21.3	9.5	6.8	12.4	11.5	8.1	14.7	5.7	6.1	25.1	19.5	19.2	11.6	13.3
1987	5.4	8.6	8.3	13.2	14.7	20.9	10.4	6.6	14.0	11.7	8.0	16.5	6.3	12.2	26.6	18.7	19.3	11.7	13.8
1988	5.8	7.8	8.3	14.3	15.8	22.4	9.4	6.4	15.8	11.1	9.1	14.0	6.9	6.6	26.1	19.3	18.8	12.1	14.0
1989	6.9	7.3	8.0	16.0	13.9	22.8	12.1	5.8	17.0	11.7	10.1	7.6	7.5	7.2	24.7	18.9	17.2	11.9	13.6
1990	6.6	7.0	9.4	19.1	15.3	23.1	11.3	5.9	17.5	10.2	10.0	10.2	5.2	7.8	16.8	20.1	15.8	12.3	12.8
1991	6.4	6.2	8.3	18.4	13.8	22.2	10.8	6.5	16.8	9.7	9.8	9.1	5.2	9.8	17.9	21.0	16.6	11.5	12.3
1992	6.4	6.5	7.8	22.8	13.8	24.5	10.2	8.6	18.3	10.3	9.6	7.5	4.8	8.6	17.7	21.6	19.8	12.3	12.9
1993	7.0	6.8	8.1	19.9	14.4	22.5	9.4	12.9	17.4	10.4	9.4	8.2	6.8	7.3	24.0	21.2	21.5	12.9	14.2
1994	6.8	6.0	8.6	17.1	16.7	23.5	10.0	13.7	16.5	13.0	6.5	8.5	5.8	7.1	23.2	20.7	23.4	13.6	14.6
1995	6.1	5.6	8.4	15.3	16.0	24.2	10.3	14.0	15.7	13.5	5.8	8.7	5.4	6.4	22.7	19.7	24.1	13.6	14.4
1996	6.6	5.4	9.6	15.2	16.4	21.7	10.5	13.6	15.8	14.1	5.3	8.0	5.1	8.5	22.7	18.9	23.6	13.5	14.4
1997	7.0	5.5	8.9	16.4	16.4	21.2	10.6	12.8	16.6	15.0	4.8	7.9	5.4	8.8	22.6	18.2	23.3	13.1	14.4
1998	7.0	6.0	7.5	14.0	17.6	18.0	11.0	14.3	18.2	16.0	4.6	9.4	5.5	8.2	21.6	18.2	34.8	12.4	13.7
1999	7.0	6.0	7.5	14.0	17.6	18.0	11.0	14.3	18.2	16.0	4.6	9.4	5.5	8.2	21.6	18.2	34.8	12.4	13.8
2000	7.0	6.0	7.5	14.0	17.6	18.0	11.0	14.3	18.2	16.0	4.6	9.4	5.5	8.2	21.6	18.2	34.8	12.5	13.9
2001	7.0	6.0	7.5	14.0	17.6	18.0	11.0	14.3	18.2	16.0	4.6	9.4	5.5	8.2	21.6	18.2	34.8	12.5	13.9

**Table BII.12. PERSONAL INCOME TAX REVENUES (% GDP) –PIRV-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	7.5	18.8	7.8	1.5	1.3	3.6	3.6	2.4	5.0	9.1	6.7	4.0	10.8	17.2	10.1	7.7	3.1	5.3	6.8
1971	8.0	20.6	8.6	1.6	1.5	3.4	4.7	2.5	6.2	9.8	6.9	3.5	11.8	17.1	10.1	7.2	3.7	5.7	7.1
1972	8.6	20.0	8.5	1.3	1.5	3.4	4.5	2.9	6.1	10.4	7.3	3.3	11.9	17.0	9.0	7.6	3.8	5.8	7.0
1973	9.2	20.4	9.8	1.3	1.6	3.4	4.8	2.9	6.1	10.4	7.5	3.2	12.6	15.5	9.0	7.5	4.1	6.3	7.3
1974	10.1	23.3	10.3	2.0	1.6	3.6	5.0	3.4	6.4	10.7	8.1	3.4	12.9	17.8	10.9	8.0	4.3	6.8	8.0
1975	12.0	21.2	9.6	1.3	2.1	3.8	5.8	3.7	8.2	10.9	7.3	3.7	14.3	18.0	12.4	7.1	4.2	6.7	8.2
1976	11.8	20.5	10.0	1.8	2.3	4.2	6.8	4.5	7.7	10.8	7.4	4.2	16.4	19.3	12.1	7.6	4.0	7.2	8.6
1977	13.1	20.0	10.7	1.6	2.6	4.4	7.1	5.2	9.0	10.6	7.7	4.6	15.5	19.7	10.8	7.8	4.0	7.6	8.7
1978	14.1	20.3	10.0	1.7	3.1	4.3	7.1	5.6	9.0	10.6	8.7	4.7	13.3	19.8	10.1	8.2	3.8	7.5	8.5
1979	14.2	20.6	9.6	2.4	3.5	4.3	7.4	5.7	8.4	10.8	8.5	5.3	12.4	19.5	9.3	8.8	4.4	7.4	8.3
1980	13.9	21.6	10.0	3.0	4.2	4.6	8.9	6.5	8.5	10.8	8.6	5.1	12.5	18.9	9.4	8.9	4.8	7.7	8.6
1981	14.1	21.9	9.7	2.6	4.3	4.8	9.1	7.6	8.8	10.1	9.2	6.0	13.7	18.3	9.5	9.2	5.2	7.8	8.7
1982	14.8	21.9	9.5	3.2	4.2	4.8	9.5	8.2	8.7	10.0	9.0	6.4	13.5	18.5	9.6	8.9	5.3	7.9	8.8
1983	14.8	22.4	9.3	3.2	4.9	5.1	10.1	8.7	9.2	9.1	8.8	7.1	13.5	18.3	9.3	8.6	5.4	8.1	8.8
1984	15.1	22.6	9.4	3.7	5.2	5.2	11.0	8.6	9.2	8.6	9.2	7.0	13.9	17.8	9.1	8.1	5.2	8.1	8.9
1985	15.0	23.7	9.6	3.4	5.1	5.0	10.7	9.2	9.0	7.9	9.8	7.1	14.4	17.4	8.8	8.3	5.4	8.2	8.9
1986	14.5	23.5	9.4	3.4	4.8	4.9	11.4	8.8	8.4	8.3	9.9	5.2	15.4	17.4	8.9	8.3	5.4	8.0	8.8
1987	14.1	24.6	9.8	3.3	5.8	4.9	11.8	9.0	8.0	8.5	9.5	4.6	13.6	18.0	8.4	8.7	5.3	8.2	8.9
1988	13.4	26.0	9.5	3.6	5.9	4.5	12.5	9.4	7.8	9.0	9.4	5.8	14.6	19.1	8.4	8.3	5.1	8.2	8.9
1989	11.9	25.9	9.9	2.9	6.6	4.4	10.1	9.9	7.6	8.8	8.2	5.7	14.2	20.5	8.4	8.5	5.6	8.3	9.1
1990	12.5	25.0	8.7	3.2	6.4	4.4	10.1	9.9	8.2	10.2	8.9	4.9	14.8	19.1	9.9	8.4	6.3	8.1	9.0
1991	12.2	25.3	9.0	3.4	6.8	5.1	10.5	10.0	7.6	11.4	9.4	5.5	15.0	15.5	9.8	8.0	6.5	8.5	9.2
1992	11.9	25.7	9.4	3.0	7.4	4.6	10.6	9.7	8.4	10.8	9.7	6.8	14.5	16.6	9.6	7.8	6.0	8.5	9.1
1993	12.6	26.1	9.2	3.1	7.2	4.7	10.8	10.5	9.0	11.2	10.0	6.3	14.5	16.4	8.3	7.9	5.7	8.6	9.0
1994	12.8	26.9	9.0	3.8	7.0	4.8	10.8	9.6	8.5	8.5	9.1	6.0	15.8	16.0	8.5	8.0	4.9	8.2	8.8
1995	13.0	26.7	9.3	4.1	6.9	4.7	9.6	9.5	8.1	7.7	9.6	5.9	14.8	16.1	8.6	8.3	4.4	8.2	8.8
1996	12.8	26.6	9.0	4.0	6.9	5.0	9.7	9.7	8.4	7.2	10.1	6.1	15.5	17.1	8.2	8.8	4.2	8.2	8.8
1997	12.9	26.2	8.7	4.5	6.5	5.3	9.7	10.2	7.6	6.3	10.6	5.8	14.0	16.9	7.8	9.4	4.4	8.2	8.7
1998	13.2	25.2	9.1	5.1	6.3	7.2	9.1	8.3	7.0	6.0	10.6	5.7	14.0	17.8	9.2	9.6	3.4	8.3	9.0
1999	13.0	25.7	9.5	4.9	6.3	7.6	9.2	8.7	6.8	6.1	10.4	6.1	13.8	17.6	9.2	9.8	2.8	8.6	9.3
2000	13.1	25.1	9.5	4.6	6.3	7.4	8.8	8.4	6.7	5.8	9.8	6.2	13.9	16.7	9.1	9.8	2.8	8.5	9.1
2001	13.0	24.9	8.6	4.5	6.3	7.4	8.7	8.4	6.5	5.7	9.5	6.3	13.7	16.3	8.9	9.9	2.8	8.2	8.8

**Table BII.13. CORPORATE INCOME TAX REVENUES (% GDP) –CORV-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	2.1	1.0	1.7	0.2	0.9	1.9	1.8	1.4	4.1	2.3	1.4	0.0	1.4	1.5	2.8	2.8	3.8	1.7	1.8
1971	2.3	0.9	1.4	0.3	1.0	1.7	1.3	1.5	3.7	2.5	1.4	0.0	1.3	1.4	2.3	2.2	3.7	1.6	1.6
1972	2.3	0.9	1.4	0.6	1.0	1.7	1.1	1.7	3.2	2.5	1.4	0.0	1.2	1.5	1.9	2.5	3.5	1.6	1.6
1973	2.7	1.2	1.7	0.4	1.0	1.8	1.1	1.7	4.0	2.6	1.1	0.0	1.3	1.5	2.2	2.6	4.1	1.7	1.7
1974	2.7	1.3	1.6	0.8	1.0	2.4	1.5	1.2	5.4	2.6	1.4	0.0	1.3	1.4	3.0	2.6	5.2	1.8	1.9
1975	2.7	1.2	1.4	0.5	1.0	1.6	1.1	1.5	4.8	3.1	1.5	0.0	1.3	1.7	1.9	2.3	3.7	1.6	1.6
1976	2.5	1.5	1.5	0.6	1.0	1.9	1.2	1.7	5.3	2.8	1.2	0.0	1.5	1.6	1.5	2.4	3.5	1.7	1.7
1977	2.4	1.2	1.9	0.5	0.9	1.9	1.0	1.8	6.4	2.7	1.2	0.0	1.3	1.3	1.8	2.7	3.7	1.8	1.8
1978	2.4	1.2	1.9	0.5	0.9	1.6	1.2	2.4	7.5	2.5	1.2	0.0	1.3	1.4	2.0	2.7	3.8	1.9	1.8
1979	2.5	1.3	2.0	0.6	0.9	1.6	1.4	2.1	5.8	2.4	1.3	0.0	1.2	1.4	2.2	2.7	3.9	1.8	1.8
1980	2.2	1.3	1.8	0.7	1.0	1.8	1.3	2.2	5.2	2.7	1.3	0.0	1.2	1.1	2.7	2.5	4.3	1.9	1.9
1981	2.1	1.1	1.7	0.7	1.1	1.9	1.5	2.5	5.0	2.9	1.3	0.0	1.4	1.3	3.0	2.1	4.3	1.9	2.0
1982	2.5	1.1	1.7	0.9	0.9	2.0	1.5	2.8	5.0	2.8	1.1	0.0	1.4	1.5	3.3	1.6	4.1	2.0	2.1
1983	2.5	1.3	1.7	0.6	1.1	1.7	1.3	3.0	6.0	2.6	1.2	0.0	1.3	1.6	3.6	1.3	4.2	1.9	2.2
1984	2.7	2.4	1.8	0.7	1.2	1.7	1.2	3.2	5.3	2.4	1.3	0.0	1.2	1.7	3.9	1.6	4.5	2.0	2.3
1985	2.3	2.3	2.1	0.7	1.4	1.7	1.1	3.2	6.4	2.8	1.5	0.0	1.2	1.6	4.3	1.7	4.5	2.1	2.4
1986	2.5	3.0	2.0	1.0	1.5	1.9	1.2	3.3	5.4	3.0	1.4	0.0	1.2	2.2	3.4	1.6	4.4	2.2	2.4
1987	2.4	2.2	1.7	1.2	1.8	2.0	1.1	3.6	5.5	3.4	1.4	0.0	1.1	2.0	3.3	1.9	5.0	2.2	2.4
1988	2.5	2.1	1.8	1.0	1.8	2.0	1.4	3.3	5.7	3.2	1.4	0.0	1.3	2.6	3.5	2.0	5.4	2.2	2.4
1989	2.5	2.1	1.9	1.0	2.5	2.0	1.1	3.7	5.9	3.0	1.6	1.8	1.3	2.0	4.1	2.0	5.5	2.4	2.6
1990	2.1	1.5	1.5	1.3	2.6	2.0	1.6	3.8	5.6	3.1	1.5	2.5	1.8	1.5	4.1	1.7	5.1	2.3	2.5
1991	2.1	1.6	1.4	1.2	2.3	1.7	1.9	3.6	5.3	3.2	1.6	2.8	1.8	1.6	3.2	1.7	4.8	2.2	2.3
1992	1.8	1.6	1.3	1.3	2.0	1.7	2.3	3.8	5.0	2.8	1.8	2.7	1.4	1.3	2.7	1.6	4.1	2.1	2.1
1993	2.2	2.2	1.2	1.6	1.7	1.6	2.8	3.6	7.0	3.1	1.6	2.3	0.2	2.0	2.2	1.8	3.3	2.0	2.0
1994	2.4	2.0	1.0	2.0	1.5	1.7	3.0	3.4	6.7	3.1	1.4	2.3	0.4	2.3	2.5	2.0	3.2	1.8	1.9
1995	2.7	2.0	0.9	2.2	1.6	1.8	2.7	3.2	6.7	3.0	1.7	2.6	1.6	2.8	3.0	2.2	3.2	1.8	2.0
1996	2.8	2.3	1.4	2.0	1.8	1.9	3.0	3.6	7.1	3.9	2.3	3.1	2.4	2.7	3.4	2.2	3.4	2.2	2.4
1997	3.1	2.6	1.5	2.1	2.3	2.2	3.1	3.8	6.9	4.2	2.2	3.6	3.4	3.0	3.8	2.3	3.2	2.5	2.7
1998	3.2	2.8	1.6	3.1	2.2	2.3	3.2	4.0	7.0	4.2	2.5	3.3	3.9	3.0	3.7	2.3	2.4	2.6	2.8
1999	3.1	2.8	1.6	3.0	2.2	2.5	3.2	4.2	6.9	4.2	2.4	3.6	3.9	3.0	3.7	2.4	1.9	2.7	2.9
2000	3.2	2.8	1.6	2.8	2.2	2.4	3.0	4.1	6.7	4.1	2.3	3.6	3.9	2.8	3.6	2.4	1.9	2.6	2.8
2001	3.1	2.7	1.5	2.8	2.2	2.4	3.0	4.1	6.6	4.0	2.2	3.7	3.8	2.7	3.6	2.4	1.9	2.6	2.8

**Table BII.14. PROPERTY INCOME TAX REVENUES (% GDP) –PWRV-**

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK	US	JP	EUR-11	EU-15
1970	0.9	2.3	1.4	1.4	0.8	1.1	2.5	1.3	1.4	1.1	1.2	1.3	0.6	0.5	4.0	3.0	1.1	1.2	1.7
1971	0.9	2.2	1.4	1.5	0.8	1.0	2.7	1.3	1.5	1.0	1.1	1.4	0.6	0.5	4.0	3.1	1.3	1.2	1.6
1972	0.9	2.2	1.2	1.5	0.9	1.0	2.7	1.4	1.6	1.0	1.1	1.3	0.6	0.5	4.1	3.4	1.3	1.2	1.6
1973	1.0	2.3	1.3	1.3	0.9	1.2	2.4	1.1	1.6	1.1	1.0	1.4	0.7	0.4	3.7	3.2	1.3	1.2	1.5
1974	0.9	2.4	1.2	1.5	0.9	0.7	2.5	0.9	1.4	1.1	1.0	1.3	0.7	0.4	3.9	3.2	1.5	1.0	1.4
1975	0.9	2.2	1.2	1.4	0.9	1.1	2.2	0.8	1.5	1.0	1.1	1.0	0.6	0.4	3.9	2.9	1.6	1.0	1.4
1976	0.9	2.1	1.3	1.9	0.8	1.2	2.3	0.8	1.6	1.1	1.1	0.8	1.1	0.5	3.8	3.1	1.5	1.1	1.5
1977	1.0	2.2	1.4	1.5	0.8	1.1	2.1	0.9	1.8	1.3	1.0	0.8	0.8	0.4	3.7	3.0	1.6	1.1	1.5
1978	1.0	2.4	1.2	1.6	0.9	1.1	1.5	0.9	1.7	1.6	1.1	0.7	0.7	0.4	3.5	2.9	1.5	1.1	1.4
1979	1.1	2.4	1.1	1.0	1.0	1.2	1.5	1.0	1.8	1.6	1.1	0.7	0.7	0.4	3.5	2.5	1.6	1.1	1.5
1980	0.9	2.3	1.1	0.9	0.9	1.2	1.5	1.0	1.8	1.5	1.1	0.7	0.6	0.4	3.8	2.4	1.6	1.1	1.5
1981	0.8	2.1	1.1	0.7	0.9	1.3	1.3	1.0	1.8	1.4	1.1	0.8	0.7	0.4	4.3	2.4	1.8	1.1	1.6
1982	0.7	1.8	1.1	0.9	0.8	1.4	1.2	1.0	1.9	1.4	1.1	0.8	0.7	0.5	4.4	2.4	1.9	1.1	1.6
1983	0.8	2.3	1.1	0.8	0.9	1.4	1.3	0.9	2.1	1.4	1.1	1.0	0.8	0.8	4.1	2.5	2.0	1.1	1.6
1984	0.8	1.8	1.1	0.7	0.9	1.7	1.4	0.9	2.0	1.4	1.1	1.0	0.9	0.8	4.0	2.4	2.0	1.2	1.6
1985	0.8	2.0	1.0	0.7	0.9	1.7	1.4	0.9	1.9	1.4	1.0	1.0	0.9	1.1	4.1	2.3	2.1	1.2	1.6
1986	0.8	2.3	1.0	0.7	1.0	1.8	1.3	0.9	2.0	1.5	1.0	0.9	1.0	1.3	4.1	2.4	2.3	1.2	1.6
1987	0.9	2.5	1.0	0.7	1.3	1.8	1.5	0.9	2.2	1.6	0.9	0.9	1.0	2.8	4.3	2.5	2.5	1.3	1.8
1988	1.0	2.4	1.0	0.8	1.4	1.9	1.4	0.9	2.5	1.5	1.1	0.9	1.2	1.5	4.2	2.5	2.4	1.3	1.8
1989	1.1	2.2	1.0	0.7	1.5	1.9	1.5	0.8	2.8	1.6	1.1	0.6	1.3	1.7	4.1	2.5	2.3	1.3	1.7
1990	1.0	2.0	1.1	1.1	1.6	1.9	1.5	0.8	2.9	1.5	1.2	0.8	0.9	1.7	2.8	2.5	2.1	1.3	1.5
1991	1.0	1.8	0.9	1.0	1.5	1.9	1.5	0.9	2.6	1.6	1.2	0.8	0.9	1.9	2.8	2.6	2.3	1.3	1.5
1992	0.9	1.9	0.9	1.3	1.5	2.0	1.5	1.3	3.0	1.6	1.2	0.8	0.8	1.7	2.6	2.6	2.5	1.3	1.5
1993	1.1	2.0	0.9	1.2	1.5	1.8	1.4	2.1	3.4	1.7	1.2	0.8	1.1	1.4	3.3	2.6	2.5	1.5	1.7
1994	1.1	1.9	0.9	1.2	1.7	2.0	1.5	2.1	3.0	1.7	0.7	0.8	1.0	1.4	3.3	2.6	2.5	1.5	1.7
1995	1.0	1.7	0.9	1.1	1.6	2.1	1.4	2.1	2.7	1.7	0.7	0.8	0.9	1.3	3.4	2.6	2.4	1.5	1.7
1996	1.1	1.7	1.1	1.1	1.7	1.9	1.5	2.1	2.9	1.8	0.7	0.8	1.0	1.8	3.4	2.6	2.3	1.5	1.8
1997	1.2	1.7	1.0	1.3	1.7	2.0	1.5	2.1	2.9	1.9	0.6	0.8	1.0	1.9	3.4	2.6	2.3	1.5	1.8
1998	1.2	1.8	0.9	1.3	1.8	2.1	1.5	2.1	3.1	1.9	0.6	0.9	1.0	1.9	3.5	2.7	3.1	1.5	1.9
1999	1.2	1.8	0.9	1.3	1.8	2.2	1.5	2.2	3.0	2.0	0.6	1.0	1.0	1.8	3.5	2.7	2.5	1.6	1.9
2000	1.2	1.8	0.9	1.2	1.8	2.1	1.5	2.1	3.0	1.9	0.6	1.0	1.0	1.7	3.5	2.7	2.5	1.6	1.9
2001	1.2	1.8	0.8	1.2	1.8	2.1	1.4	2.1	2.9	1.8	0.6	1.0	1.0	1.7	3.4	2.7	2.5	1.5	1.9

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