

**Discussion Papers**

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**Alexandre Baclet  
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**Income Taxation and Household Size:  
Would French Family Splitting  
Make German Families Better off ?**

**Berlin, December 2005**



**DIW Berlin**

German Institute  
for Economic Research

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#### IMPRESSUM

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## **Abstract**

In this paper, we address the question whether family support via the income tax system is more generous in France than in Germany, as it is often claimed in the public debate. We use two micro-data sets and a micro-simulation model to compare effective average tax rates for different household types in France and Germany. Our analysis shows that the popular belief that French high income families with children face lower average tax rates than their German counterparts is true, however not due to the French Family splitting but rather to the different definitions of taxable incomes in both countries. Actually, low income families with less than three children even fare better in terms of tax relief in Germany than in France. The French system leads to lower average tax rates than the German one (over a large range of the income distribution) only for families with three children.

**Key-Words:** Income Taxation, Family, Income Distribution, France, Germany

**JEL-Classification:** D31, H24, J18

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# 1 Introduction

The treatment of households of different size within the income tax system has been widely discussed, both in the academic as well as in the public debate. In times of declining fertility rates, family policy has shifted more and more into the centre of the public discussion. One example for this development is Germany with one of the lowest fertility rates in Europe, although compared to other countries, a relatively large amount of public funds is spent on family policy measures.<sup>1</sup> In addition to the low fertility rate in general, the low employment of mothers as well as the low fertility of highly educated women is often also seen as an emerging problem.<sup>2</sup> Reforms of the treatment of marriage and children within the income tax system have often been proposed as measures which could influence both fertility and work incentives for mothers.

In contrast to Germany, neighbouring France seems to have reached both, a high fertility rate and high maternal employment levels (see, among others, Fagnani 2001 or Letablier 2003). In German public opinion, the French “family splitting” is seen as one important reason why French family policy performs better than its German counterpart, and there are many proponents of the introduction of a family splitting in Germany throughout all political parties. While some proponents see the family splitting as a way to allocate more money to families with children,<sup>3</sup> others even hope to abolish the strong disincentive to work for secondary earners under the existing income splitting for married partners (“Ehegattensplitting”).<sup>4</sup> However, it follows from economic theory that any sort of joint taxation has negative implications on the work incentives for secondary earners, no matter what splitting procedure is applied. The fact that a family splitting for Germany would not affect the labor supply of married women has also been shown empirically (see Beblo et al. 2004 and Althammer 2000). In our analysis, we want to focus on the first argument, namely ask if it is true that the French family splitting allocates more money to families with children than the treatment of children in the German income tax does.

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<sup>1</sup> In the election campaign of 2005, the Social Democrats as well as the Conservatives saw family policy as a core issue in their campaigns. The conservatives proposed an increase of the tax allowance for children, while the Social Democrats were in favour of reforming parental leave benefits.

<sup>2</sup> However, Schmitt and Winkelmann (2005) show that the often cited hypotheses of below-average fertility of high skilled women in Germany is not found in the data.

<sup>3</sup> See, among others, newspaper articles in the German dailies “Die Welt” (“Der Rabenstaat”, July 5<sup>th</sup> 2004), “Die Sueddeutsche Zeitung” („Familien sind um ein Vielfaches höher belastet als Singles“, February 15<sup>th</sup> 2005), and the weekly „Die Zeit“ („Die Mitte im Blick“, Nr. 42/2005).

To be precise, we will analyze the effects of both income tax systems and all their family components, i.e. the family splitting in France and the tax allowance for children in Germany, as well as child benefits in both countries. In a first step, we will analyze the tax schedule and the tax treatment of children, which together yields a distribution of “theoretical” average tax rates. However, since the concept of taxable income differs substantially between the two countries, we will, in a next step, have a closer look at the definitions of taxable income and its distribution in France and Germany. For this purpose, we use two representative micro data sets and a microsimulation model. Based on these data, we can calculate effective average tax rates independently from any arbitrary definition of taxable income. We then compare the shape of these effective tax rate profiles across households with a varying number of children as well as differences in effective tax rates between the two countries. It should be stressed at this point that we are not so much concerned with the over-all distribution of net incomes in both countries. For an analysis of this type, we would also have to include all sorts of government transfers in both countries such as social assistance, housing allowances etc. We are explicitly interested in the effect of the two different income tax systems only.

There is a large body of literature on comparative analysis of income tax systems in general, and the treatment of marriage and children in particular. In most of the studies, average tax rates for “representative households” are shown (see, among others, OECD 2002 and Parsche and Osterkamp 2004). Although interesting as sort of summarized information, these studies necessarily remain a rough approximation. First of all, the empirical distribution of incomes and characteristics over the whole population is not taken into account. Second, the different definitions of taxable incomes are also not considered in much detail. Only a few studies compare effective average tax rates across countries using micro data and microsimulation techniques (see O’Donoghue and Sutherland 1999, Immervoll 2004 and Corak et al. 2005), however, none of them focuses on a comparison between France and Germany.

Another part of the literature, especially in Germany, is concerned with the distributional and employment effects of a reform of the German income splitting for married partners towards the French family splitting. Beblo et al. (2004) and Althammer (2000) use microsimulation models to impose the French family splitting on the German tax base and tax schedule and analyze the effects on income distribution and work incentives. They find, however, that such

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<sup>4</sup> See, among others, article in “Die Zeit” (“Die Mitte im Blick”, Nr. 42/2005)

a reform would only lead to minor effects with respect to both, income distribution as well as work incentives.

Our results are very much in line with these findings. However, since we are using data-sets from both countries and, in addition to the comparison of tax schedules and the treatment of children, also analyze the different definitions and distributions of taxable income, we are able to draw conclusions about the profiles of effective average tax rates in both countries. We find that the popular belief that French high income families with children face lower average tax rates than Germans is true, however not due to the Family splitting but due to the different definition of taxable income. The redistributive power of the Family splitting in France is limited due to the ceiling of the family splitting gain. The French system results in lower average tax rates than the German one (over a large range of incomes) only for families with three children.

## 2 Definitions of basic concepts

Before we start with the description of the institutional details in both countries, we will formally define concepts used in the following analysis. In particular, we want to be precise about what we understand as *tax schedule*, *tax base function*, *taxable income* and the *progressivity* of an income tax system.

Let pre-tax income be denoted as  $Y$  and any family characteristics such as marital status, number and age of children as  $X$ . Then a *tax base function*  $f$  is any function  $f(Y,X)$  that transforms pre-tax income  $Y$  into taxable income  $Z$ . The tax schedule  $t(Z,X)$  is then applied to this taxable income, yielding the tax liability  $T$ . Note that in both steps, household characteristics ( $X$ ) may intervene. Family components of an income tax system might be implemented in the tax base function, such as the child allowance (“Kinderfreibetrag”) in Germany. Cash benefits such as child benefits in France and Germany would be part of the tax schedule, since they lower the tax liability, which can even become negative in the presence of child benefits and low pre-tax incomes. The overall tax system thus consists of the tax schedule function and the tax base function.

The *progressivity* of an income tax system is closely related to the concept of average effective tax rates. The *average effective tax rate* is the tax liability of a tax unit divided by its pre-tax income, i.e.  $T/Y$ . An income tax system is called progressive if the effective average tax

rate is an increasing function of pre-tax income  $Y$ . In our analysis, we will often plot the effective average tax rates for different household types, i.e. for different values of  $X$ . Clearly, focusing only at  $T/Z$  eludes part of the characteristics of a tax system, especially when the tax base function  $f(Y, X)$  is very different across countries. Nevertheless, we will also look at the shape of “*theoretical*” average tax rates  $T/Z$ , in order to differentiate between the impact of the tax base function  $f(.)$  and the tax schedule  $t(.)$  in both countries.

Comparing effective average tax rates across countries for different household types allows to draw conclusions about the redistribution due to income taxation between households of the same size. If one wants to gain insights at horizontal distribution, however, one may have to look at how average tax rates profiles differ between households of different sizes. Since the average tax burden across households differs between France and Germany, we will compare the difference between the effective average tax rate profile of each household type and the median of the effective average tax rate across all households in each country.

### **3 Institutional setting**

This section provides a description of the income tax system in Germany and France, as far as the tax schedule and the family components are concerned. We will see that the two systems are very similar in the way adults are treated but differ considerably with respect to the treatment of children. The definition of taxable income also differs between the two countries. The year of reference is 2001, since this is the most recent year for which datasets for both countries, which we need for the empirical analysis later on, are available. Since 2001, income taxes have been modified both in France and Germany. These reforms lead top marginal tax rates in both countries to fall significantly. Nonetheless, the basic mechanisms of the two systems with regard to the treatment of families have remained the same since 2001.<sup>5</sup>

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<sup>5</sup> In Germany, the top marginal rate was reduced by 6.5 percentage points, from 48.5% in 2001 to 42% in 2005. The starting rate was also reduced, from 19.9% to 15%. The basic allowance was increased from 7,206 to 7,664 Euro (see Haan and Steiner 2005). In France, both the top marginal tax rate and the starting rate were reduced in the year 2005, from 52.75% to 39.1% and from 7.5 to 6.83%, respectively. In the same year, the basic allowance was increased from 4,121 to 4,334 Euro per year.



### 3.1 The tax schedule for a single person in France and Germany

France and Germany have similar tax schedules, as is illustrated in Figures 1 and 2. In both countries, there is a basic allowance that is meant to guarantee a tax-free minimum income. In 2001, this basic allowance was higher in Germany (7,206 Euro per year) than in France (4,121 Euro per year), however, the starting rate was significantly lower in France (7.5%) than in Germany (19.9%). The top marginal rate was slightly lower in Germany (48.5%) than in France (52.75%). Moreover, the top bracket started earlier in France. Although the shape of the marginal tax rates looks different in France and Germany, a comparison of the “theoretical” average tax rate shows that the schedules are in fact very similar. At a taxable income of 10,000 Euro per year, the average tax rate amounts to 6% in Germany and to about 7% in France; a taxable income of 20,000 Euro is on average taxed at 16% in Germany and at 17% in France. All in all, the “theoretical” average tax rates increases at a higher rate in France than in Germany. At a taxable income of 55,000 Euro, which lies in the top tax bracket in both countries, the average tax rate amounts to 31% in Germany and to 35% in France. This implies that the tax schedule in France is designed to be more progressive than in Germany for the largest part of the range of taxable income. However, we want to stress at this point, that the progressivity of the tax schedule does not allow any conclusion about the overall distributional effects of the income tax system, since the schedule is defined on taxable income. As will be shown later on, the definitions of taxable income differ considerably between the two countries.

[Figure 1 about here]

[Figure 2 about here]

### 3.2 Taking marriage into account

In both France and Germany, the tax unit of the personal income tax is the household, i.e. either a single individual or a married couple. Married couples<sup>6</sup> are eligible to income splitting, which leads to a lower tax burden for married people as soon as the tax schedule is progressive and incomes are unequally distributed within the household. Formally, the calculation of a household’s tax liability  $T$  in the presence of income splitting can be written as:

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<sup>6</sup> In France, not only married couples but also spouses or two other people who signed the PACS (‘Pacte civil de solidarité’) are eligible to income splitting (although not immediately as married couples).

$$T = k \cdot t \left( \frac{\sum_i w_i}{k} \right) \quad (1)$$

where  $w_i$  is the income of household member  $i$ ,  $t(\cdot)$  is the tax schedule and  $k$  is the “splitting divisor”. For married couples without dependent children, the splitting divisor  $k$  equals 2 in both countries. Compared to the tax liability that would result if the two spouses filed separately, income splitting leads to a so-called “splitting gain”. This gain is a non-decreasing function of income disparity within the couple and also depends on taxable income. It reaches its maximum for single-earner couples with a taxable household income higher than 110,000 Euro per year and amounts to 10,000 Euro per year in the case of the German tax schedule of the year 2001 (see also Steiner and Wrohlich 2004). In France the maximum is reached at about 90,000 Euro and also amounts to about 10,000 Euro. Figures 3 and 4 show the “splitting gain” as a function of taxable household income and the income distribution within the couple. The shape of the “splitting gain” is very similar in both countries, which is due to the similar shape of the “theoretical” average tax rates in France and Germany.

[Figure 3 about here]

[Figure 4 about here]

### 3.3 Taking children into account

As has been shown above, both the tax schedule and the treatment of married couples are similar in the French and German tax systems. The treatment of children, however, differs significantly between the two countries. In Germany, every child gets a child benefit (“*Kindergeld*”) that amounted to 1,656 Euro per year (in 2001) for the first and the second, 1,848 Euro for the third and 2,148 Euro for the fourth and every subsequent child. Moreover, there is a tax allowance (“*Kinderfreibetrag*”) for every child amounting to 5,112 Euro per year. Child benefit and tax allowance, however, are not granted jointly, rather a so-called higher-yield test is applied: If the amount of tax saved by means of the tax allowance is higher than the amount of the child benefit, then the tax allowance is applied. In the case of families with one child, in 2001 the reduction in the tax burden by means of the tax allowance was larger than the amount of the child benefit for annual taxable incomes of 55,000 euro and upwards, which is about 17% of all families eligible to child benefits or child allowances in Germany.

The maximum amount of relief by means of the tax allowance was obtained in that year by families with a taxable income of over 110,000 Euro, for whom it amounted to almost 2,500 euro per child per annum (see also Althammer 2002).

In France, parents are also paid a child benefit (“*Allocations familiales*”), but only from the second child onward. In contrast to Germany, the amount of the benefit depends on the age of the child. For young children, the child benefit amounted to 1,248 Euro per year for the second, and 1,644 Euro per year for the third and every subsequent child. For children between 11 and 16 years, the benefit is increased by 360 Euro per year, for children older than 16 it is increased by 648 per year. In addition, there is an income-tested supplement (“*Complément familial*”) for the third and every subsequent child. This supplement amounted to 1,680 Euro per year up to a taxable income of 24,545 Euro<sup>7</sup> in the year 2001. Above this ceiling, the supplement is withdrawn linearly at a rate of 100%. Moreover, in France children also influence their parents’ tax due through the so-called “*Quotient familial*” or “*Family splitting*”. For the first and second child, the splitting divisor ( $k$  in equation 1) is increased by one “half share”, i.e. by 0.5. For the third and every subsequent child, it is increased by 1 (“full share”). The tax relief obtained by this family splitting has a ceiling at 2,017 Euro per half share per year.<sup>8</sup>

Figures 5, 6 and 7 illustrate the “theoretical” average tax rates that are implied by the income tax systems and its family components in France and Germany.

[Figure 5 about here]

[Figure 6 about here]

[Figure 7 about here]

As is illustrated in Figure 5, the average tax rates for couples with one child start at negative values in Germany due to the child benefit. Theoretical average tax rates for this household type in Germany lie below the average tax rate in France over the whole distribution of taxable income. The difference is most pronounced at the lower bound of the distribution. This is due to the fact that there is no child benefit for the first child in France and the tax gain from the family splitting is only effective for higher incomes. Also for very high incomes – from

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<sup>7</sup> For a family with three children.

<sup>8</sup> For a graphic depiction of the difference in absolute amounts of tax gains in France and Germany, see Wrohlich et al. (2005).

80,000 Euro onwards – the German tax allowance for children provides more relative tax gain than the French family splitting with its ceiling. For couples with two children as well, low income families face lower average tax rates in Germany than in France, as can be seen from Figure 6. Up to an income of about 35,000 Euro per year and above about 65,000 Euro per year, average tax rates are lower in Germany than in France for couples with two children. For couples with three children, however, the French system leads to lower average tax rates over a wide range of the income distribution (Figure 7). This is due to the income-tested supplement to the child benefit and the fact that the splitting divisor is twice as high for the third child than for the second, whereas in Germany the tax allowance for children does not increase for the third child. However, for families with a taxable income up to about 15,000 Euro per year, the relative tax relief is higher in Germany than in France.

### **3.4 The treatment of single parents**

The tax treatment of single parents also differs between Germany and France. In 2001, there has been a tax allowance for single parents amounting to 2,870 Euro per year in Germany.<sup>9</sup> In France, single parents are granted a splitting divisor of 1.5, in addition to the shares that are granted for the children. Figure 8 illustrates the theoretical average tax rates that result from the tax tariff and the family components for singles with one child. Since there is no child benefit for the first child in France, German average tax rates lie well below the French ones for families with a taxable income up to about 16,000 Euro per year. Between 16,000 and 45,000 Euro, the average tax rates are lower in France for this household type. For families in the upper part of the income distribution, i.e. with a taxable income of 45,000 and more, average tax rates are again lower in Germany.

[Figure 8 about here]

### **3.5 First conclusions and limits**

Table 1 summarizes the most important regulations with respect to the tax treatment of married couples, children and single parents in France and Germany. Overall, the comparison of theoretical average tax rates shows that the German tax system is more generous towards low-

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<sup>9</sup> This tax allowance (“Haushaltsfreibetrag”) has been abolished in 2004 and replaced by another tax allowance (“Entlastungsbetrag”) that amounts to 1,308 Euro per year.

income families than the French one. At the upper end of the income distribution, German families face lower theoretical average tax rates than French ones, which is due to the ceiling of the family splitting tax gain. In fact, a family splitting system with a ceiling as implemented in France has the same effect as a child allowance as implemented in Germany; in both cases, the tax relief has a similar pattern, its amount is only depending on the absolute value of the ceiling and the allowance, respectively.

However, the differences presented here should not be over-interpreted. First, both welfare systems provide other benefits which, although they sometimes do not explicitly focus on children, nonetheless lead to very significant transfers towards families with children.<sup>10</sup> Secondly, comparing schedules relative to taxable income can be misleading if the definition of taxable income differs across the two countries. Therefore, in the next section, we will have a closer look at the definition and the distribution of taxable incomes in France and Germany.

[Table 1 about here]

## **4 The definition and distribution of taxable income in France and Germany**

### **4.1 Three different definitions of income**

Throughout our analysis, we use three different definitions of household income, pre-tax income ( $Y$ ), taxable income ( $Z$ ) and after-tax income ( $Y-t(Z)$ ). In the definitions of pre-tax and after-tax income, we seek for a concept that is comparable across the two countries. Therefore, we define pre-tax income as gross market income (i.e. the sum of incomes from dependent employment, self-employment, capital, rent and lease) less social security contributions plus unemployment benefits and pensions. In the French case, income tax includes the “*impôt sur le revenu des personnes physiques*” (IRPP), the “*Contribution Sociale Généralisée*” (CSG) and the “*Contribution pour le Remboursement de la Dette Sociale*” (CRDS).<sup>11</sup> CSG

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<sup>10</sup> In France, housing allowances („Allocations logement“) are an important redistributive device. Means-tested benefits for lone benefits („Allocation Parent Isolé“), if added to the picture, would also certainly change the pattern at the bottom of the income distribution. On the other hand, also for Germany many social transfers such as social assistance („Sozialhilfe“) or housing benefits („Wohngeld“) would change the picture.

<sup>11</sup> Note that in France, the social protection fund is partly financed by the “Generalized Social Contribution” (CSG, “Contribution Sociale Généralisée“), which is a proportional tax (7,5%) on all types of incomes, including capital income. The CSG has been completed since 1996 by the so-called Tax to Pay-off Social Debt (CRDS, “Contribution pour le Remboursement de la Dette Sociale“), which has approximately the same base and a rate of 0,5%. 5.1% of the CSG can be deduced of the taxable income, therefore the remaining 2.4% are part of the taxable income. The CRDS is part of the taxable income. Thus, 2.9% of the pre tax income is twice taxed. Both CSG and

and CRDS are not properly speaking income taxes; they were designed to finance the Social Security system only. We see three reasons to integrate them in our analysis: first the move from contributions to taxes to finance the Social Security system is a general move of countries with generous welfare states which try to keep labor costs down (i.e. the cut-off line is moving and will move quicker in the future; second, in the French context, and as far as the shaping of income inequalities is concerned, ignoring the CSG (a flat tax which revenue is significantly higher than that of the income tax properly speaking) would completely blur the general picture and overstate the progressivity of the system; third and correlatively only the IRPP+CSG package is comparable to the German income tax in terms of revenue (relative to the GDP). In Germany, the income tax (“*Einkommensteuer*”) and the solidarity tax (“*Solidaritätszuschlag*”)<sup>12</sup> are included.

After-tax income is defined as pre-tax income less income tax, plus child benefits. Child benefits are included in the after-tax income because in Germany, tax allowances for children and child benefits are not separable, both being part of the income tax system. For the sake of a detailed comparison of the systems in France and Germany, child benefits (“*Allocations Familiales*” and “*Complément Familial*”) are also added to after-tax income in France. All other social benefits and transfers are excluded from this definition.

Taxable income, finally, refers to the definition given by the tax law of both countries. One of the most important differences between the definition of taxable income in France and Germany is the treatment of unemployment benefits and pensions. While unemployment benefits and the larger part of pensions is not part of the taxable income in Germany, they are fully taxed in France.<sup>13</sup> Further, allowable expenses also differ substantially between the two countries. In Germany, there is a lump-sum deduction that amounted to 1,044 Euro per year in

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CRDS were meant to be insignificant and provisional when they were introduced. They now lost both of these features and are an important part of French direct taxes. Being proportional, they moreover have an effect on the progressivity of the French tax system. We thus decided to integrate them in the “income tax” studied here. Pre-tax income is thus measured before CSG and CRDS are paid.

<sup>12</sup> The German „Solidaritätszuschlag“ was first introduced in 1991 to finance the burden of the German reunification. In 1991 and 1992 it was a proportional rate of 3,75% of the income tax (and corporate tax) liability. It was not charged in 1993 and 1994 and implemented again in 1995 at a rate of 7,5%. From 1998 on, it amounts to 5,5% of the income tax liability.

<sup>13</sup> In fact, unemployment benefits are not directly taxed in Germany, but included in the income tax via the so-called „Progressionsvorbehalt“. This means that they are added to taxable income first in order to calculate the average tax rate, which is then applied to taxable income excluding unemployment benefits only. Furthermore, pensions are not fully taxed in Germany, but only to the extent of their profit share (“*Ertragsanteil*”), which is defined as amounting to 32% of pensions received from the 60<sup>th</sup> birthday onwards and 27% of pensions received from the 65<sup>th</sup> birthday onwards. In 2005, the profit share of pensions was increased to 50% for all pensions and will be linearly increasing until it reaches 100% in the next decades.

2001 (“*Werbungskostenpauschbetrag*”), while in France, every employee is granted an allowance as high as 28% of gross income from employment.

Another important difference is the treatment of social security contributions: In France, they are not part of taxable income at all, while in Germany, only part of them are deductible (“*Vorsorgepauschale*”) and calculated following a non-linear function decreasing in income and dependent on marital status.<sup>14</sup>

From this short overview of the most important differences in the definition of taxable income in France and Germany, one can already infer the different effects on the progressivity of the overall income tax system in both countries. The fact that the larger part of unemployment benefits and pensions are not taxed in Germany while they are fully taxed in France, is expected to increase the progressivity of the income tax in Germany as compared to France. The same effect is to be expected from the different treatment of social security contributions. Finally, also the fact that allowable expenses are proportional to income in France while there is a lump-sum amount in Germany, should affect the progressivity in the same way. In the following, we will compare the distribution of pre-tax income and taxable income in both countries. We believe that this is an important intermediate step on the way to the analysis of effective average tax rates that will be presented in section 5.

## **4.2 Description of the data**

In the following empirical analysis, we use survey data from France and Germany for incomes earned in 2001. For France, we use the “Taxable Income Survey” 2001 (ERF, “*Enquête Revenus Fiscaux*”). This survey is based on the French Labor Force Survey, which is a representative sample of private households living in France containing information on approximately 75,000 households. The ERF matches respondents from the Labor Force Survey with their income tax returns, which are provided by the French tax administration (DGI, “*Direction Générale des Impôts*”). For Germany we use the 2002 wave of the German Socio-Economic Panel (SOEP), which is a representative panel study of private households living in Germany. In the year 2002, which contains information on incomes earned in 2001, about

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<sup>14</sup> Single individuals with a gross income from employment of 10,000 Euro per year can deduct 100% of their social security contributions; at an income of 20,000 Euro it is 48% and at 50,000 Euro it is 20% of social security contributions they can deduct. For a married couple with a joint gross income of employment as high as 20,000 Euro per year, it is still 100% they can deduct, at a joint income of 50,000 Euro, it is 41%.

12,000 households participated in the survey.<sup>15</sup> We decided to use the SOEP instead of the German Income Tax Statistics for two reasons. First of all, the most recent micro data of the Income Tax Statistics in Germany currently are for the year 1998. Second, in Germany, not all tax-payers are obliged to file a tax returns due to the pay-as-you-earn system for employees. Therefore, in the German Income Tax Statistics certain groups, especially single and low-income employees or employees who do not claim itemized deductions that are not already taken into account by their wage tax, are underrepresented (see Bach et al. 2005).

The French dataset includes all three definitions of incomes as defined above. The SOEP, however only includes information on gross and net incomes. Therefore, we make use of the tax-benefit microsimulation model STSM and simulate the income variables as defined above.<sup>16</sup> One should keep in mind that the French dataset has characteristics which could bias the comparison: Relying on tax returns, it may have a different tendency to underreport incomes than the interview based SOEP. This different tendency can at least be assessed in the case of capital incomes which are often tax exempt in France (or subject to a proportional tax schedule in the case of fix income assets, so called “*Prélèvement libératoire*”). The French data we use thus may have a tendency to understate top incomes in comparison with German data. Note that the effective tax rates are nonetheless correct.

Both surveys contain detailed information on income, working hours, family structure and other socio-economic variables. For our analysis, we differentiate between households of different size. In particular, we focus on six different household types, namely singles with no children and singles with one child<sup>17</sup>, couples with zero, one, two and three children. The distribution of different household types in Germany and France are given in Table 2. Note that we exclude all households that cannot be classified into one of these household types, e.g. because more than two adults (with or without children) are living together. Moreover, we exclude households that only consist of students and households with negative incomes from rent and lease.

[Table 2 about here]

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<sup>15</sup> For more information on the SOEP, see [www.diw.de/sop](http://www.diw.de/sop) and Schupp and Wagner (2002).

<sup>16</sup> For a detailed documentation of the tax-benefit model STSM, see (Steiner et al. 2005).

<sup>17</sup> We decided not to analyze the effects for singles with two children because of the small number of observations in the German dataset – see Table 2.



The most frequent household type in both countries is “single without children”, followed by “couple without children”. A couple household is defined as two spouses, married or cohabiting, living together. A child is defined as a person who is either the biological or the adopted child of at least one of the spouses and not older than 27 years. Children older than 27 years who are still living in the same household as their parents are simply ignored in our analysis. This means that, e.g., a married couple living with a 24 and a 29 year old child is counted as a couple household with one child. The reason for this rather arbitrary cut-off is that in the German income tax system, child benefits or allowances are granted maximum until the 27<sup>th</sup> birthday of a dependent child (if the child is still a student).

### **4.3 The distribution of pre-tax and taxable income in France and Germany**

Figure 9 shows the distribution of pre-tax and taxable income in France and Germany for the whole population. The distribution of pre-tax income is very similar in both countries, in fact, one can hardly see any difference in the graph. At the lower end of the income distribution, pre-tax income in France is slightly higher than in Germany, while at the upper end, pre-tax income is slightly lower than in Germany. Compared to the distribution of pre-tax incomes, the distribution of taxable income differs considerably in France and Germany. Since unemployment benefits and pensions are fully part of taxable income in France but not in Germany, taxable income in Germany lies below taxable income in France in the first four deciles. In the upper part of the income distribution, however German taxable incomes lie well above the French ones, which is due to the differences in deductible expenses and social security contributions.

[Figure 9 about here]

Figures 10 and 11 show the income distributions of pre-tax and taxable incomes for different household types. For singles and couples without children, taxable income is lower up to the sixth decile in Germany than in France; in the upper three deciles, taxable income is substantially higher in Germany. For households with children, this pattern is less pronounced. For all couples with children, taxable income in Germany lies above taxable income in France over the whole range of the distribution, and the difference between the distributions in Germany and France is increasing with higher incomes.

[Figure 10 about here]

[Figure 11 about here]

From what we have presented up to now, we know that, (i) the tax schedule is similar in the two countries, although somewhat more progressive in France than in Germany for certain ranges of the income distribution, (ii) the distribution of pre-tax incomes is very similar in both countries and (iii) the distribution of taxable income is more “equal” in France than in Germany, which could weaken the progressivity of the French income tax system as compared to the German one. In the next section, we will show how these effects add up to the shape of effective average tax rates in the two countries.

## **5 A comparison of effective average tax rates in France and Germany**

As has been pointed out in section 2, effective average tax rates, defined as the tax liability less child benefits ( $T$ ) over pre-tax income ( $Y$ ), is the result of (i) the tax schedule, (ii) the definition of taxable income and (iii) the family components of the tax system. In this section, we compare effective average tax rates in France and Germany. We start with the case of single persons without children. From looking at the tax schedule only (Figures 1 and 2), we would expect the French average tax rate to lie above the German rate for most of the part of the income distribution and also have a steeper slope, therefore being more progressive. However, Figure 12 shows that the opposite is true: Effective average tax rates in Germany are higher throughout the income distribution than in France and moreover, they increase at a higher rate than in France for a large range of the income distribution, resulting in more progressivity. Obviously, this is due to the different definitions of taxable incomes.

[Figure 12 about here]

For single parents with one child, the picture of effective average tax rates (see Figure 13) also differs from the distribution of “theoretical” average tax rates as shown in Figure 8. As expected, the effective average tax rate for this household type is negative in Germany for low incomes due to the child benefit. German effective average tax rates lie below the French ones for more than 80% of all households of this type. Only for households in the highest two deciles, the average tax rate is lower in France than in Germany, although the theoretical average tax rates in Germany lie below the French one for incomes higher than 45,000 Euro per year. This again is a result of the different definitions of taxable income.

[Figure 13 about here]

Couples with one child also face negative effective average tax rates at the bottom of the income distribution in Germany. As can be seen in Figure 14, for 60% of all couples with one child, effective average tax rates are lower in Germany than in France. It is interesting, however, that for annual pre-tax incomes above 36,000 Euro per year, the effective average tax rate in Germany lies above the average tax rate in France – which was not expected when comparing the theoretical average tax rates (see Figure 5). Note also that the average tax rate for this group is increasing at a higher rate in Germany, which shows that the income tax is more progressive in Germany than in France. We also find the same pattern for couples with two children: For annual pre-tax incomes of 40,000 Euro and more, the average tax rate in Germany is considerably higher than in France (see Figure 15), which we would not have expected from the shape of theoretical average tax rates (see Figure 6).

[Figure 14 about here]

[Figure 15 about here]

Couples with three children face negative effective average tax rates at the lower half of the income distribution in both countries. As can be seen from Figure 16, 60% of all couples with three children in Germany and 70% in France do not pay taxes at all. For all other households, average tax rates are higher in Germany than in France, which was expected (at least for incomes as high as 105,000 Euro per year) from the distribution of theoretical average tax rates (see Figure 7).

[Figure 16 about here]

Based on the evidence presented here, we come to a first conclusion at this point: It is true that compared to the German case, families with high incomes, i.e. those being in the upper two deciles of the income distribution, face a lower tax burden in France. However, in contrast to what is usually referred to in the public debate, for families with less than three children, this is not due to the family splitting but to the different definitions of taxable income in the two countries. This can be seen from the “theoretical” average tax rates shown in Figures 5 to 8. Only for high income families with three children, the family splitting per se already leads to a lower effective average tax rate over a wide range of income. However, this effect is strengthened by the way taxable income is defined in France as compared to Germany. At the same time – and this is usually not mentioned in the public debate – low income and mid-

dle class families (up to the sixth decile in the case of couples with children and up the eighth decile in the case of singles with one child) the German system implies lower average tax rates than the French, while households without children face higher average tax rates in Germany than in France throughout the whole income distribution.

## **6 Some facts on horizontal redistribution**

Up to now, we have shown that between households of the same size, the income tax system in Germany results in more redistribution due to its more progressive structure than in France. Another interesting question is whether one of the two systems leads to more horizontal redistribution than the other. In particular, we want to analyze if it is true that there is more redistribution from households without children to households with children in France than in Germany, as it is often claimed in the German political debate.

To address this question, we compare in the following the median of effective average tax rates for different household types. As Table 3 shows, the median of the effective average tax rate for all households is about 8.5% in France. Households without children and couples with one child face a higher median average tax rate, all other household types have a lower median tax burden. In Germany, the median of the average tax burden is higher, as can be seen from Table 4: The median of the effective tax rate is about 2 percentage points higher than in France and amounts to about 10.5%.<sup>18</sup> However, there is more redistribution between households with and households without children than in France. The difference is most pronounced for singles with one child, who face a median effective average tax rate of -17% in Germany and -1% in France. Note that this difference cannot be due to different income distributions of these two household types (see Figure 10). However, we want to stress again at this point, that we are only looking at the effect of the income tax system in this paper – effects of other social transfers are left aside. Tables 3 and 4 also show, that there is more redistribution towards couples with two and three children in Germany. Both groups of households face a lower median average tax rate relative to the overall population in Germany than in France. Therefore, in contrast to what is generally claimed in the public debate, families in general do not gain more under the French income tax system than under the German one.

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<sup>18</sup> This is due to the fact that the income tax is more important with respect to overall tax amount in Germany than in France (see OECD 2004).

[Table 3 about here]

[Table 4 about here]

## **7 Conclusion and policy implications**

Based on a comparison of tax schedules, family components within the income tax, the definition and distribution of taxable income and the empirical distribution of effective average tax rates in France and Germany, we have shown that families do not gain more on average under the French income tax system than under the German one. Only towards families with three children is the French system more generous on average than the German one.

Low income families with less than three children are faring better in terms of tax relief under the German system, which is due to the more generous scheme of child benefits in Germany as compared to France. More precisely, most of the German system is based on lump sum transfers because only the wealthiest households are concerned by the tax allowance. Therefore most of households receive the same amount of money regardless of their income. On the contrary in France, the French system is half based on lump sum transfers (child benefits) while the other half is based on the gain generated by the family splitting. Compare to Germany, the tax gain is more progressive (and so more unequal). Therefore, low income families in France do not receive as much as the wealthiest ones.

In the highest two deciles, families of all types profit more under the French system. However, this is due to the different definition of taxable income and not to the family splitting. The redistributive power of the family splitting is substantially weakened due to the existence of a ceiling of the splitting gain. Thus, family splitting per se leads to lower average tax rates in the French system over a large range of incomes only for families with three children. If Germany were to keep its tax base function, i.e. its definition of taxable income, but would introduce the French family splitting and the French child benefits, (which is far more likely than that Germany would also take over the French definition of taxable income), all households with children would on average face a higher tax burden relative to the average household than under the existing system. We can therefore refute the statement that “in general, families would fare better under the French system” as false. Second, low-income families of all types would loose most. Couples with one child would face a higher average tax rate over the whole range of the income distribution. Comparing the theoretical average tax rates and

the distribution of taxable income shows that singles with one child and couples with two children would face higher average tax rates up to the seventh and fifth decile, respectively. Families with three children would be the only ones who would profit if Germany were to introduce the French-style family splitting and the French child benefit scheme. They would face lower average tax rates from a taxable income of 15,000 Euro per year onwards. However, if it is a political goal to increase the support for families with three children, Germany could simply double the tax allowance for the third child and the effect would be the same.

On the basis of the analysis presented here, we are of course not able to assess whether families of a certain type are better off in France than in Germany, since in addition to the tax treatment of children, many other family policy measures such as parental leave benefits, housing allowances and the availability of subsidized child care, as well as indirect taxation, differ between the two countries. What we can say, though, is that the family splitting per se cannot explain different behavioural patterns in the two countries. To explain why fertility and maternal employment is higher in France than in Germany, one should focus attention to other institutional differences, in particular the different child care regimes.

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## Appendix 1: Tables

**Table 1: Summary of the most important regulations with respect to the tax treatment of married couples and children in France and Germany**

	France	Germany
<b>Married couples</b>	joint taxation with income splitting; splitting divisor = 2	
<b>Single parents</b>	income splitting with splitting divisor = 1.5; the tax gain from this splitting has a ceiling at 1,473 Euro per year	single parents' allowance amounting to 2,870 Euro per year
<b>Children: tax treatment</b>	„Family splitting“: the splitting divisor is increased by 0.5 for the first and second, and by 1 for the third and every subsequent child the tax gain from this splitting has a ceiling of 2,017 Euro for the first and the second, and 4,034 Euro for the third and every subsequent child	child allowance amounting to 5,080 Euro per year
<b>Children: Cash benefits</b>		
1st child	--	1.656 Euro/year
2nd child	1.284 Euro/year	1.656 Euro/year
3rd child	1.644 Euro/year	1.843 Euro/year
4th and every subsequent child	1.644 Euro/year	2.148 Euro/year
supplement for children aged more than 11 years	360 Euro/year	--
supplement for children aged more than 16 years	648 Euro/year	--
Einkommensabhängiger Zuschlag ab dem 3. Kind	1.654 Euro/year	--
	Cash benefits and tax gains through family splitting are granted concomitantly	Families are eligible only for one or other of transfer benefits or tax relief via the tax allowance for children.



**Table 2: Distribution of Households to Different Household Types**

Household Types	France		Germany	
	Number of observations in the data set (ERF)	Share of the population (weighted)	Number of observations in the data set (SOEP)	Share of the population (weighted)
Singles without children (S+0)	18,587	32.1 %	2,592	43.4 %
Singles with one child (S+1)	2,100	3.6 %	214	2.7 %
Singles with two or more children (S+2+)	1,628	2.6 %	132	1.2 %
Couples without children (C+0)	19,373	29.9 %	3,135	31.6 %
Couples with one child (C+1)	7,846	12.5 %	1,032	9.1 %
Couples with two children (C+2)	8,162	12.7 %	1,136	8.8 %
Couples with three children (C+3)	3,231	4.9 %	347	3.0 %
Couples with four or more children (C+4+)	1,188	1.8 %	83	0.5 %
Sum	61,815	100%	8,671	100%

Source: Calculations of DIW Berlin and INSEE based on the ERF (2001) and the SOEP (2002).

**Table 3: Median of pre-tax and after-tax income and effective average tax rates for different household types, France**

Household type	Effective average tax rate in percent	Deviation from the median of all households in percentage points
Singles without children	8.16	-0.35
Singles with one child	8.45	-0.06
Couples without children	10.03	1.52
Couples with one child	10.81	2.30
Couples with two children	7.12	-1.40
Couples with three children	-3.54	-12.05
All households	8.51	

Source: Calculations of DIW Berlin and INSEE based on the ERF 2001.

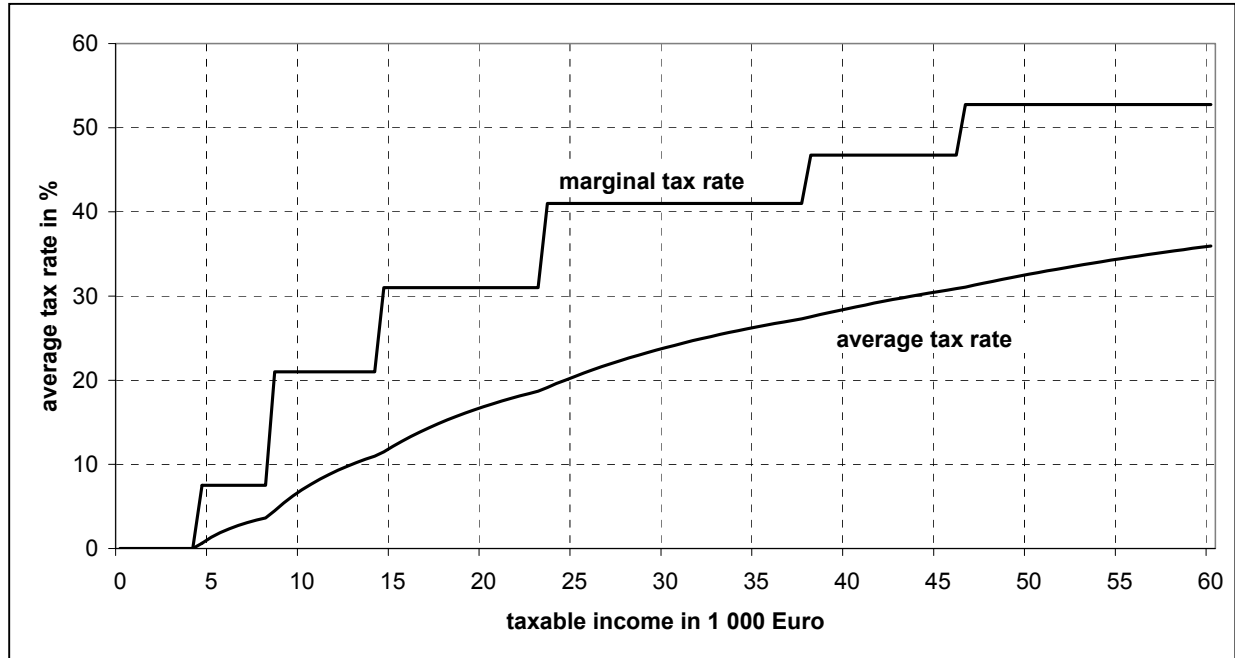
**Table 4: Median of pre-tax and after-tax income and effective average tax rates for different household types, Germany**

Household type	Effective average tax rate in percent	Deviation from the median of all households in percentage points
Singles without children	10.48	0.03
Singles with one child	-6.7	-17.15
Couples without children	11.12	0.67
Couples with one child	10.61	0.16
Couples with two children	6.75	-3.7
Couples with three children	-3.23	-13.68
All households	10.45	

Source: Calculations of DIW Berlin and INSEE based on GSOEP 2002.

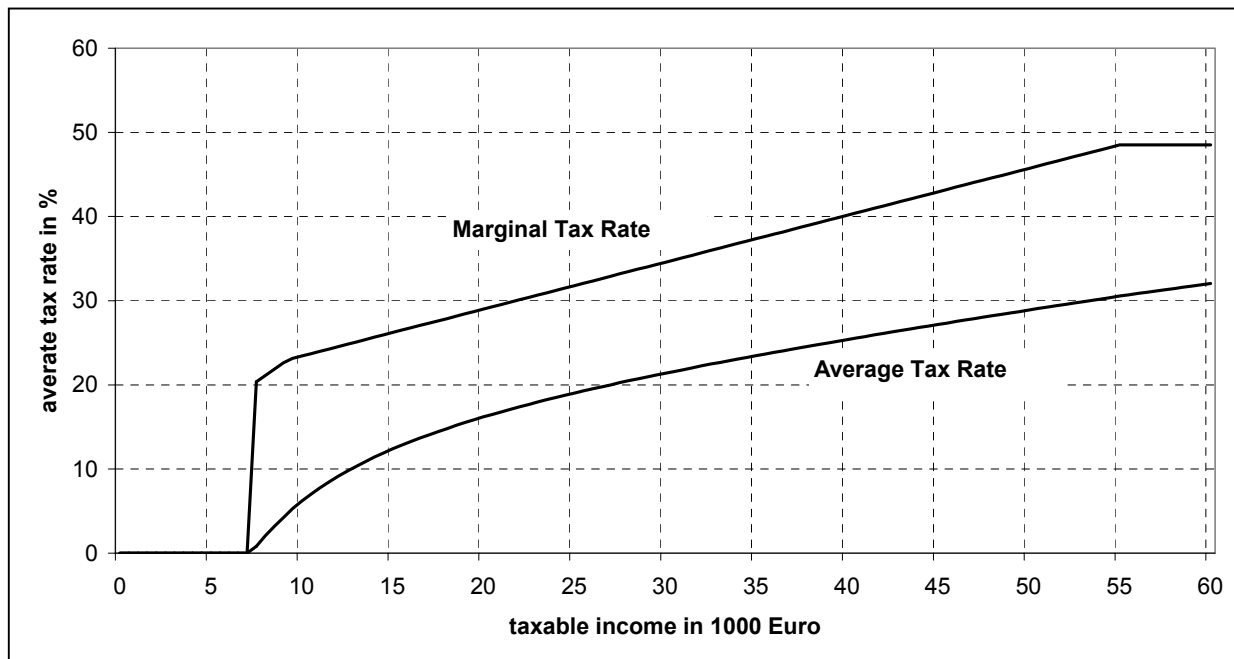
## Appendix 2: Figures

### Figure 1: Income Tax Tariff in France (year 2001)



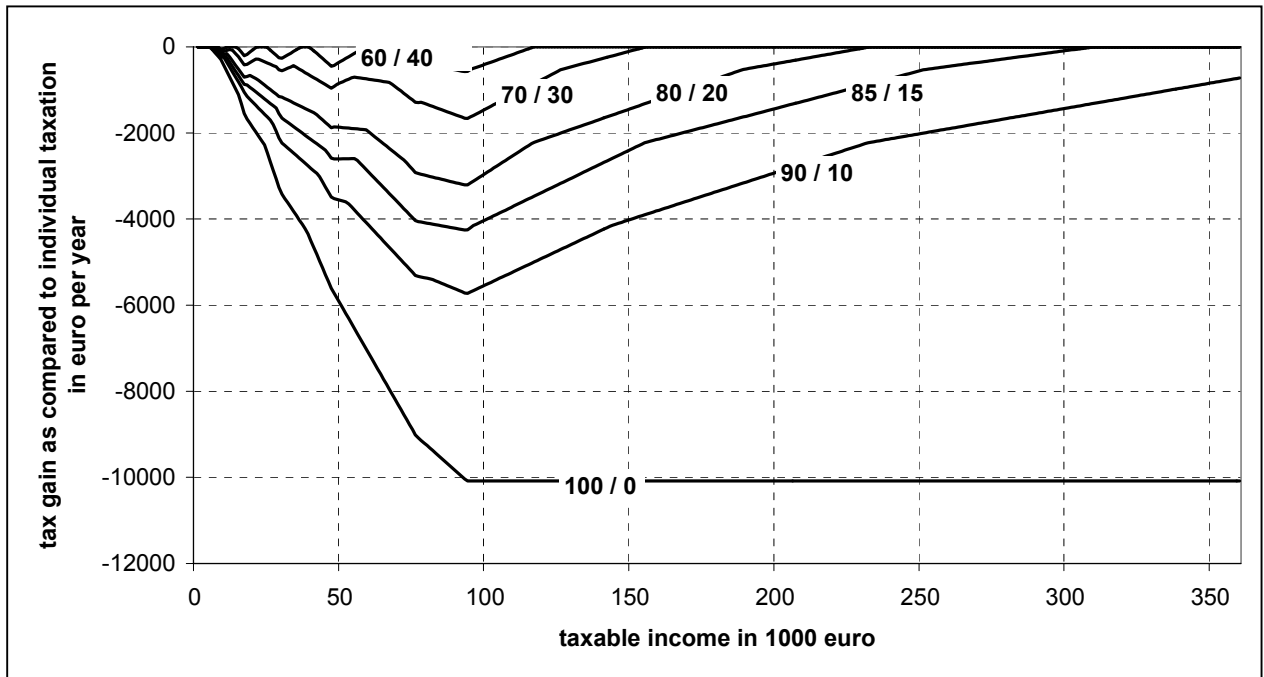
Source: Calculations of DIW Berlin and INSEE.

### Figure 2: Income Tax Tariff in Germany (year 2001)



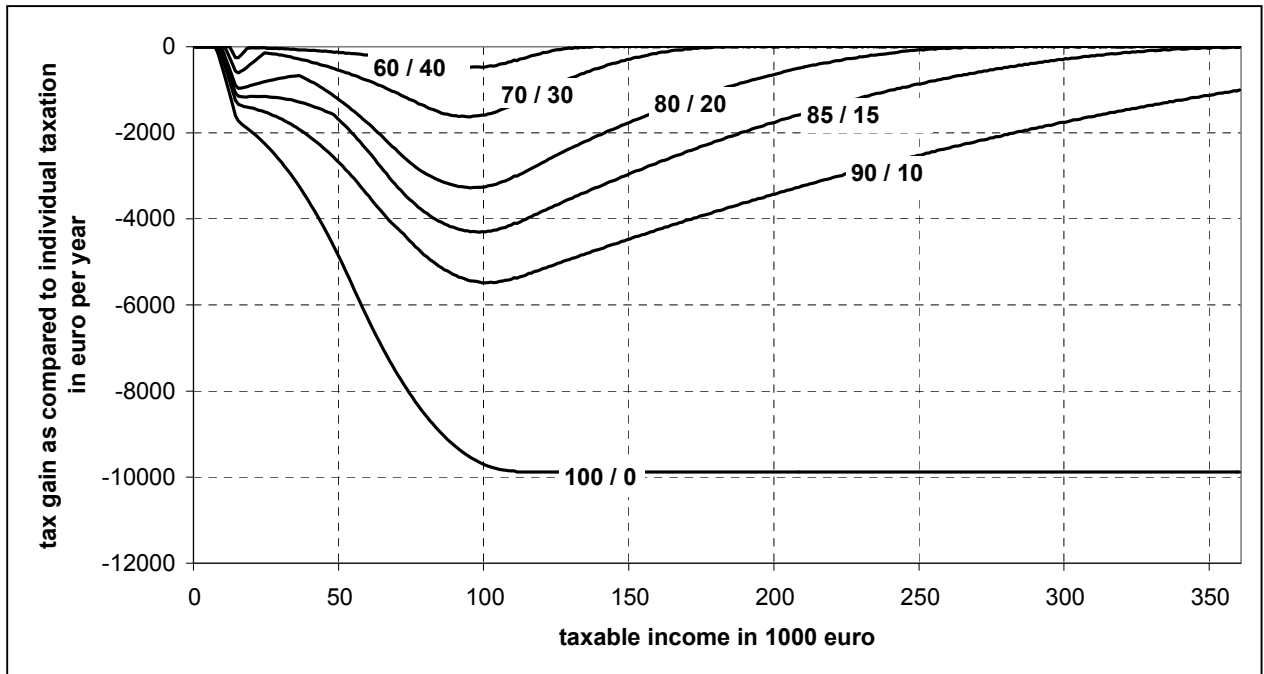
Source: Calculations of DIW Berlin and INSEE.

**Figure 3: “Splitting gain” according to the French tax tariff (2001)**



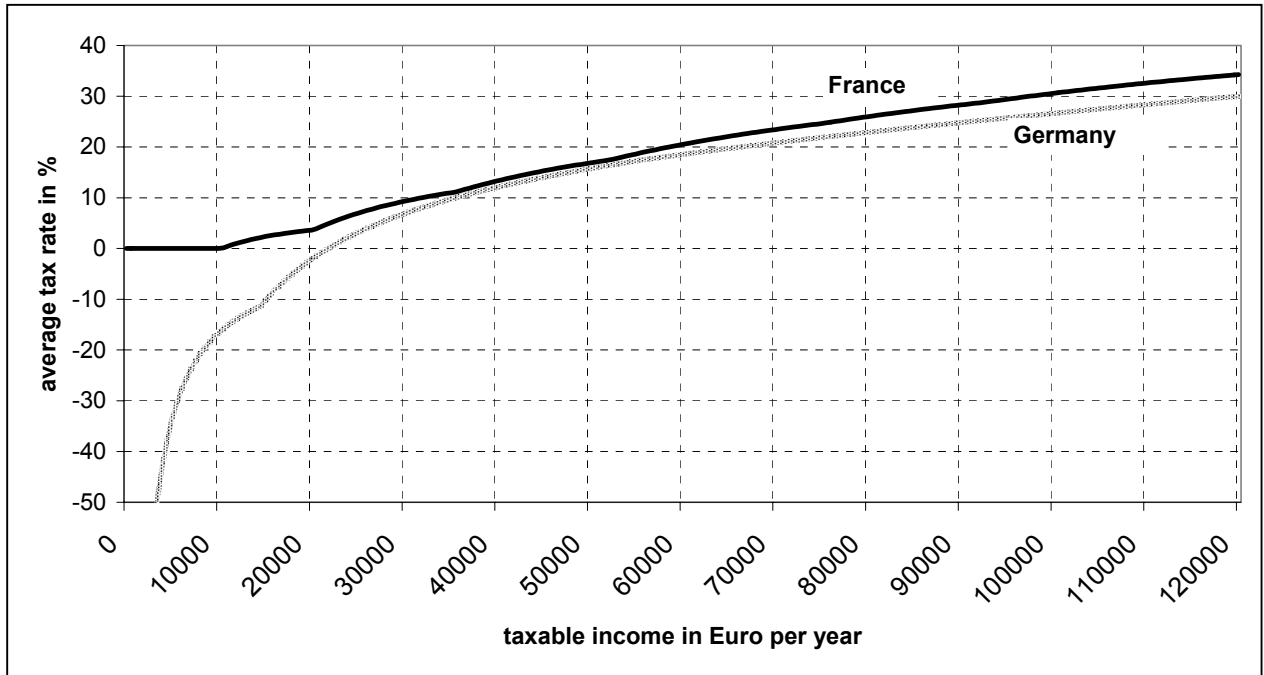
Source: Calculations of DIW Berlin and INSEE.

**Figure 4: “Splitting gain” according to the German tax tariff (2001)**



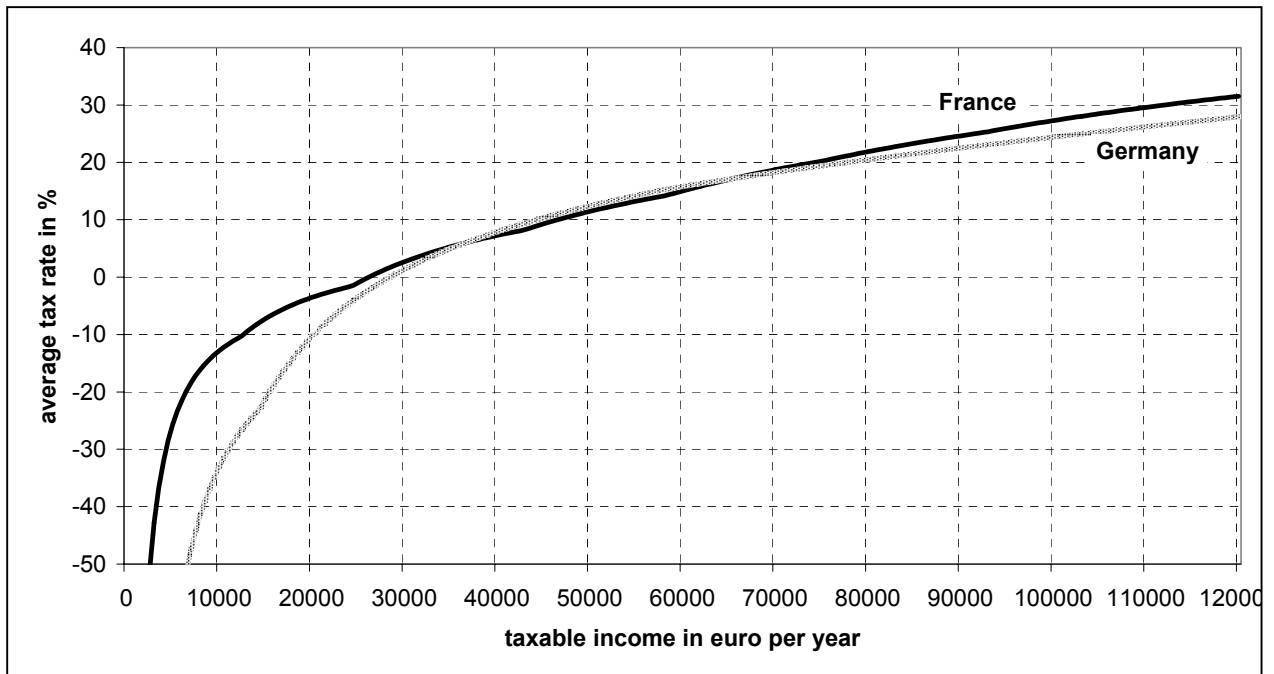
Source: Calculations of DIW Berlin and INSEE.

**Figure 5: Theoretical average tax rates, Couples with 1 child**



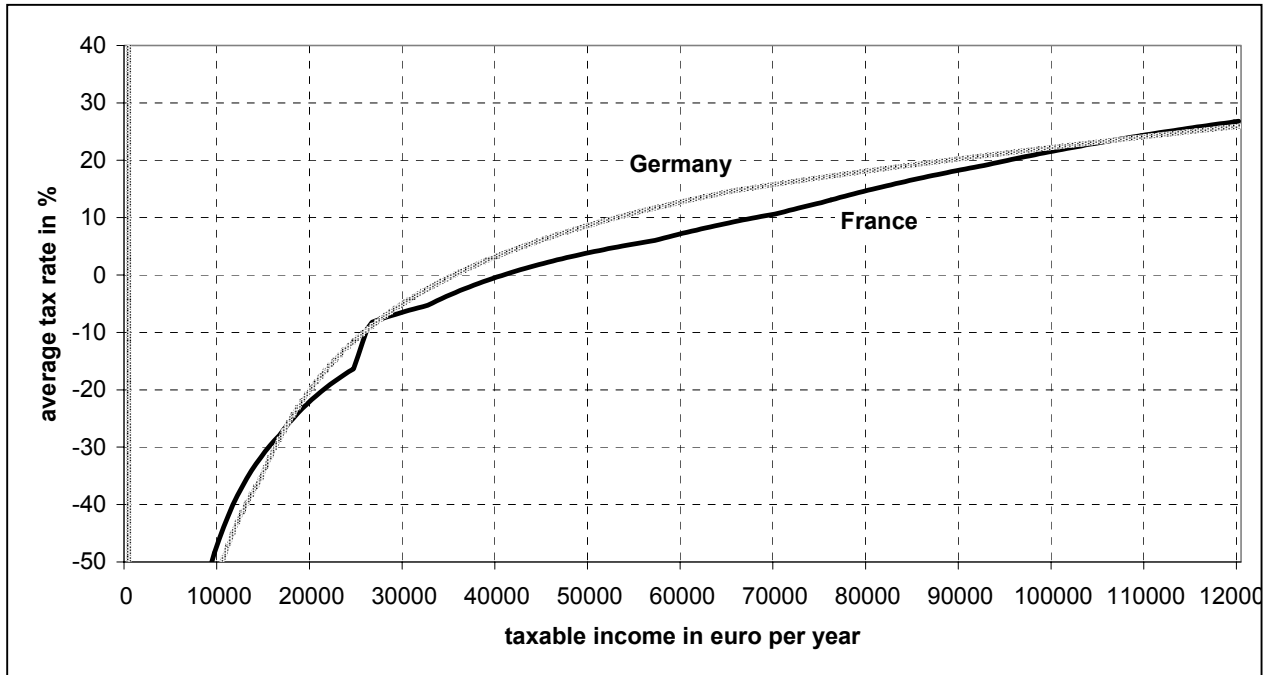
Source: Calculations of DIW Berlin and INSEE.

**Figure 6: Theoretical average tax rates, Couples with 2 children**



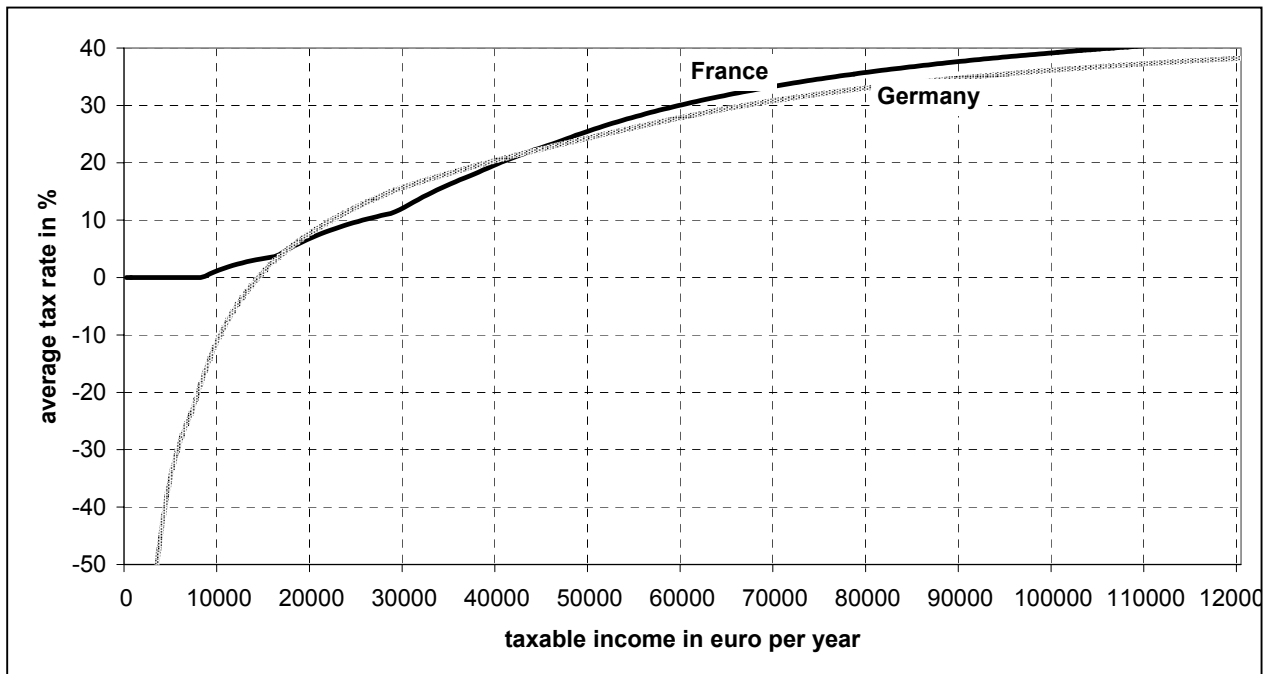
Source: Calculations of DIW Berlin and INSEE.

**Figure 7: Theoretical average tax rates, Couples with 3 children**



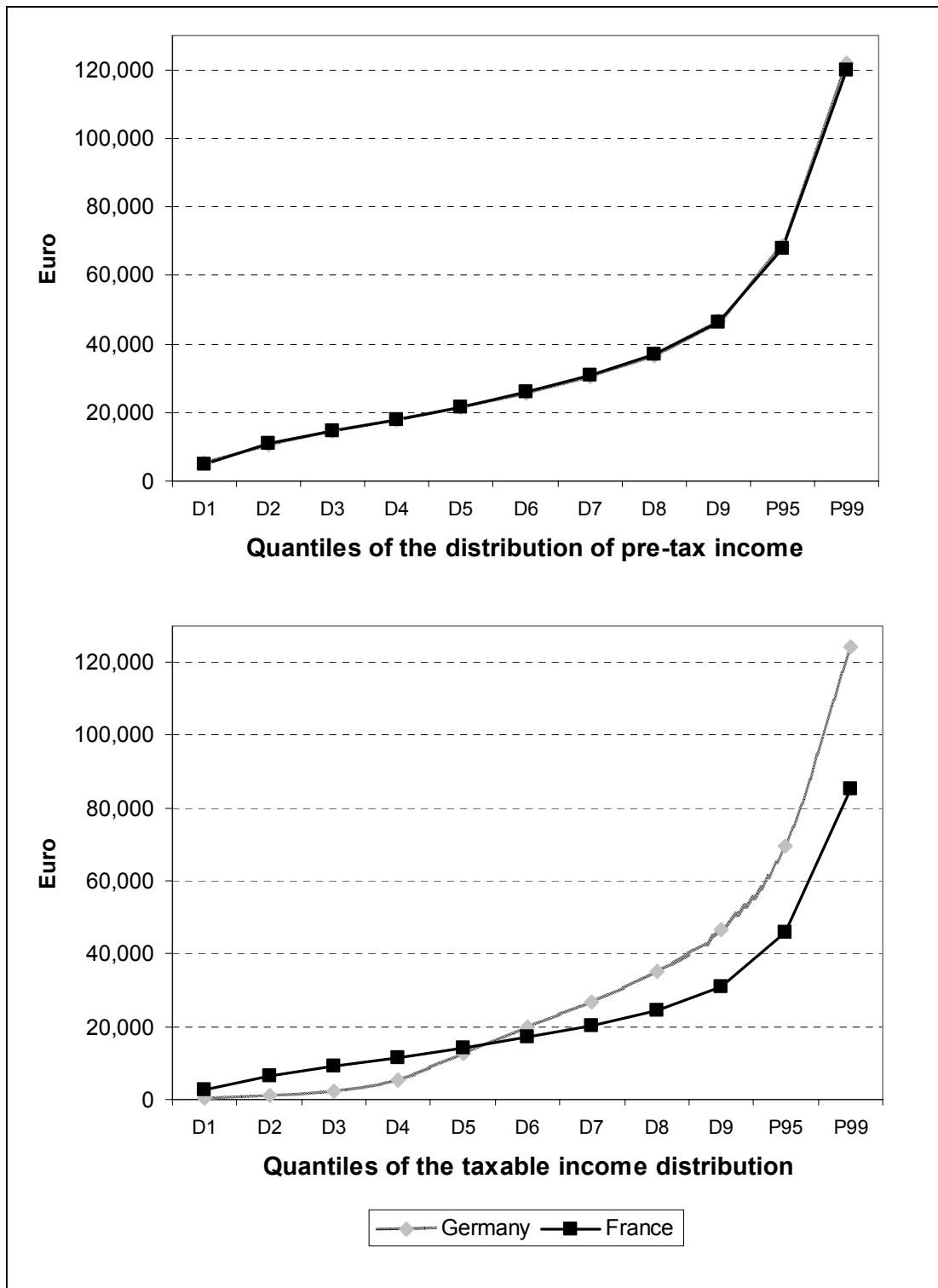
Source: Calculations of DIW Berlin and INSEE.

**Figure 8: Theoretical average tax rates, Singles with 1 child**



Source: Calculations of DIW Berlin and INSEE.

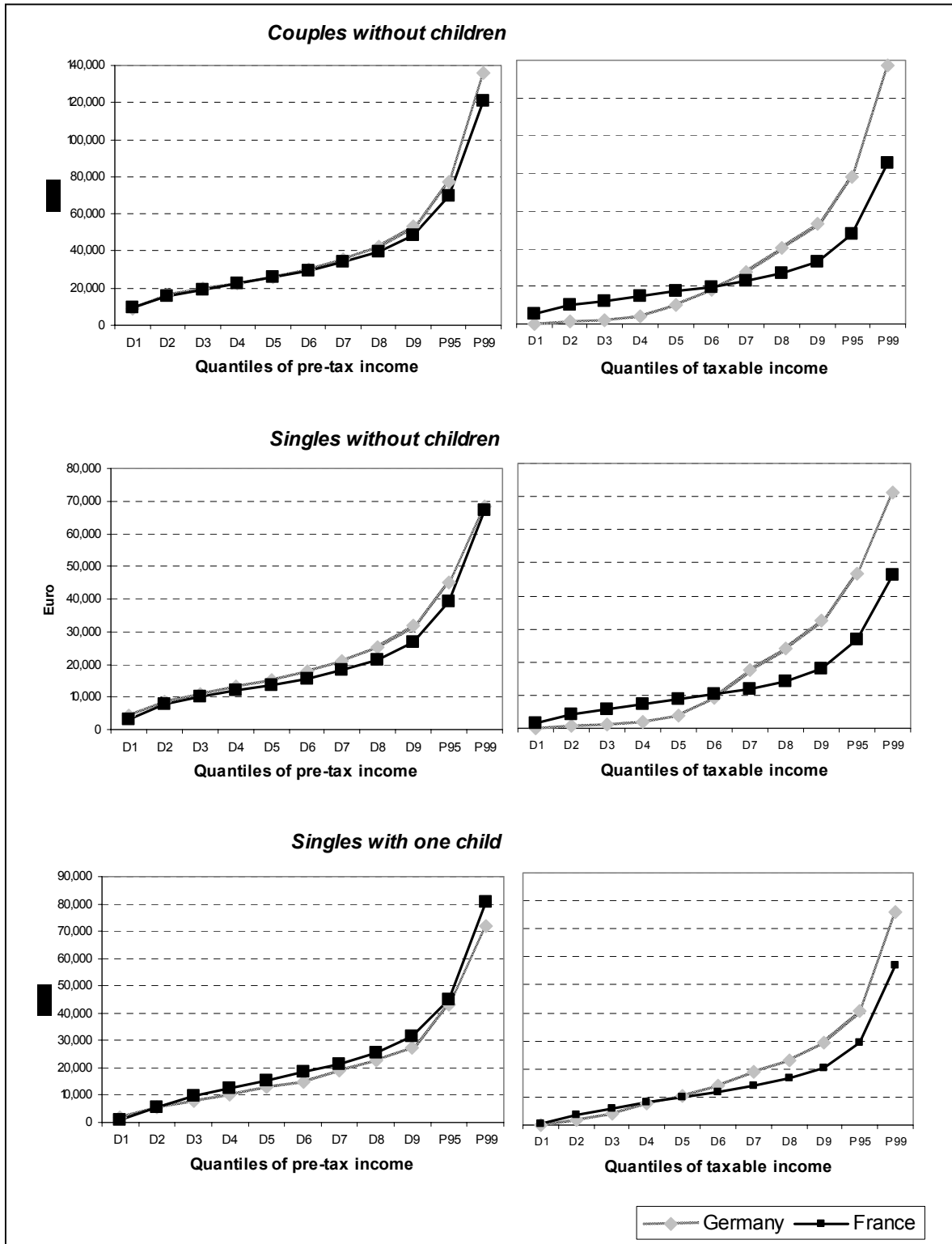
**Figure 9: The distribution of pre-tax and taxable income in France and Germany, All household types**



Note: D1-D9 refer to the mean of incomes in the first 9 deciles. P95 and P99 refer to the lower bound of the 95<sup>th</sup> and the 99<sup>th</sup> percentile, respectively.

Source: Calculations of DIW Berlin and INSEE, based on ERF (2001) and SOEP (2002).

**Figure 10: The distribution of pre-tax and taxable income in France and Germany, Households without children and single parents**

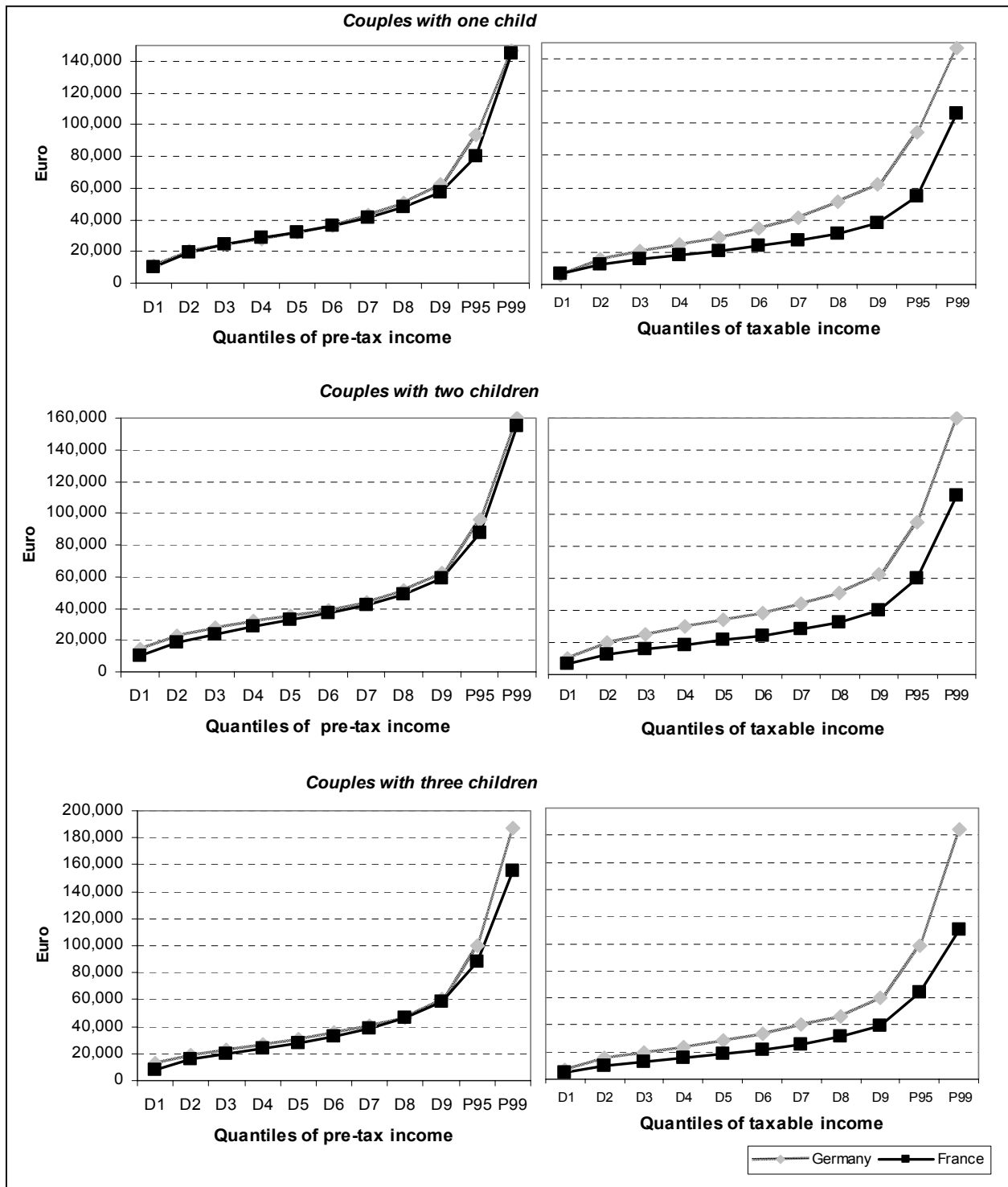


Note: D1-D9 refer to the mean of incomes in the first 9 deciles. P95 and P99 refer to the lower bound of the 95<sup>th</sup> and the 99<sup>th</sup> percentile, respectively.

Source: Calculations of DIW Berlin and INSEE, based on ERF (2001) and SOEP (2002).



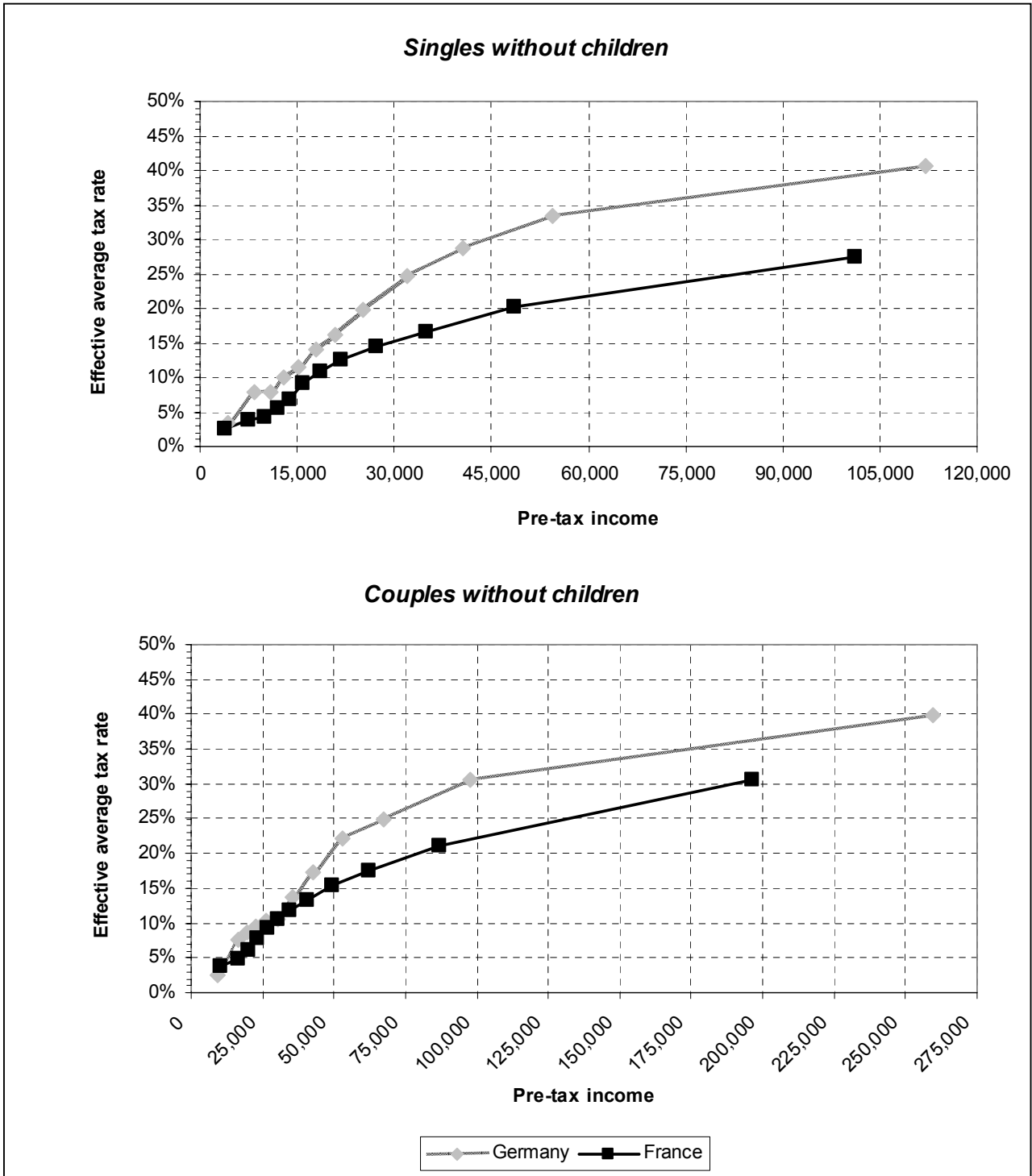
**Figure 11: The distribution of pre-tax and taxable income, Couples with children**



Note: D1-D9 refer to the mean of incomes in the first 9 deciles. P95 and P99 refer to the lower bound of the 95<sup>th</sup> and the 99<sup>th</sup> percentile, respectively.

Source: Calculations of DIW Berlin and INSEE, based on ERF (2001) and SOEP (2002).

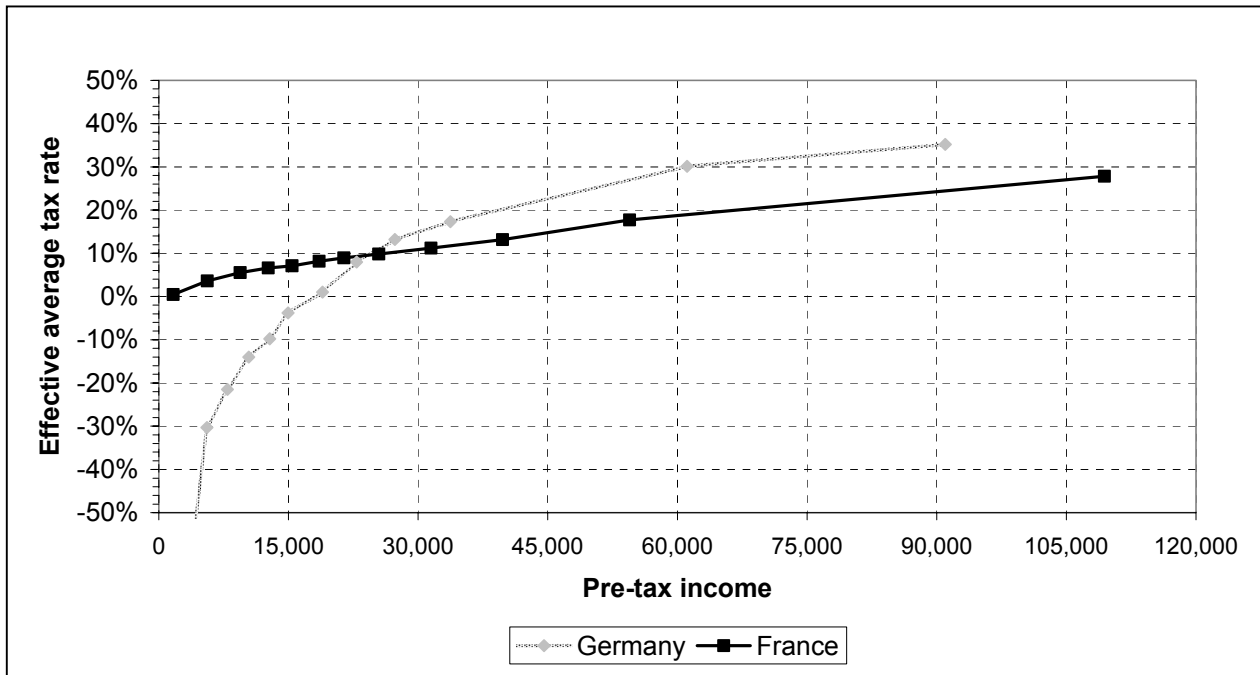
Figure 12: Effective average tax rates, Households without children



Note: Dots refer to the averages of pre-tax income and effective tax rates of the first 9 deciles and to the averages of pre-tax income and effective tax rates of P90-95, P95-99 and P99-100, respectively.

Source: Calculations of DIW Berlin and INSEE on the basis of ERF (2001) and SOEP (2002).

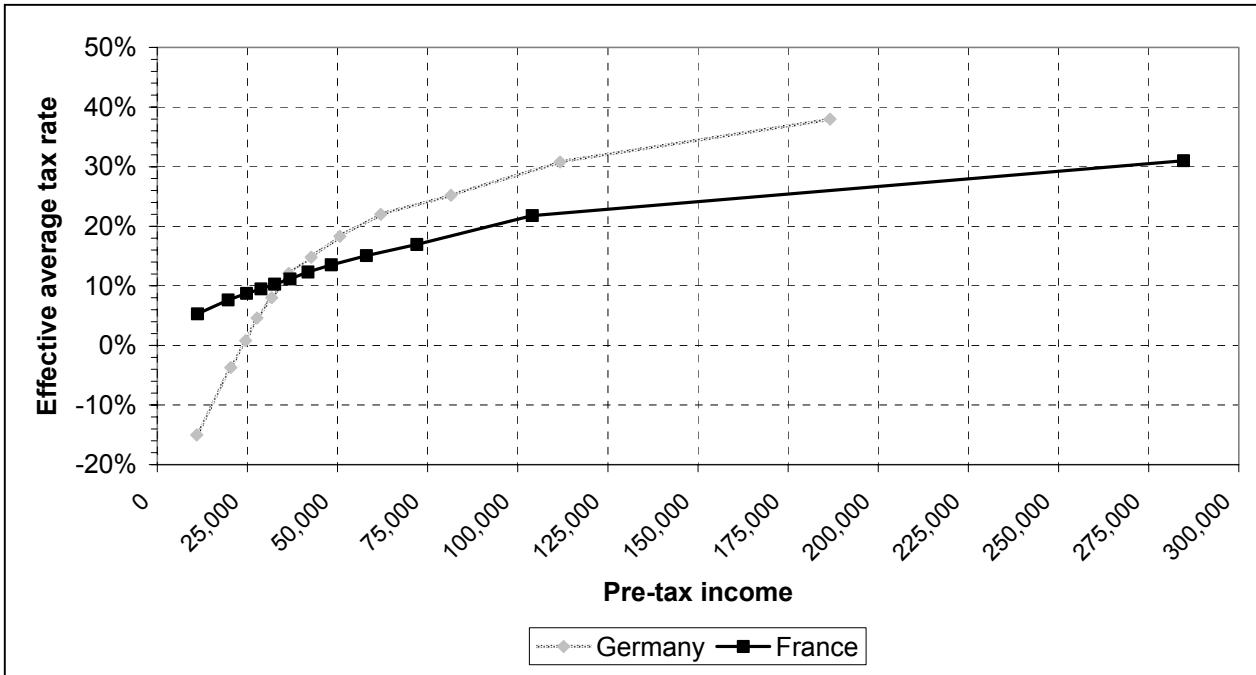
**Figure 13: Effective average tax rates, Singles with one child**



Note: Dots refer to the averages of pre-tax income and effective tax rates of the first 9 deciles and to the averages of pre-tax income and effective tax rates of P90-95, P95-99 and P99-100, respectively.

Source: Calculations of DIW Berlin and INSEE on the basis of ERF (2001) and SOEP (2002).

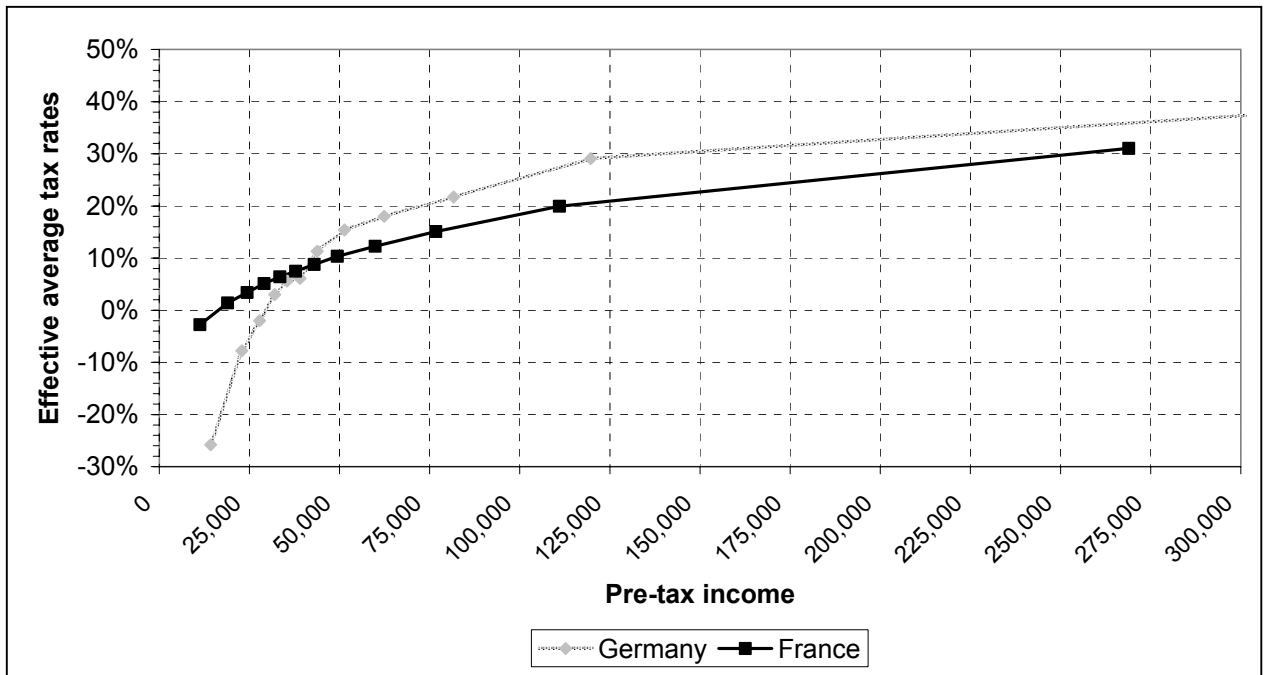
**Figure 14: Effective average tax rates, Couples with one child**



Note: Dots refer to the averages of pre-tax income and effective tax rates of the first 9 deciles and to the averages of pre-tax income and effective tax rates of P90-95, P95-99 and P99-100, respectively.

Source: Calculations of DIW Berlin and INSEE on the basis of ERF (2001) and SOEP (2002).

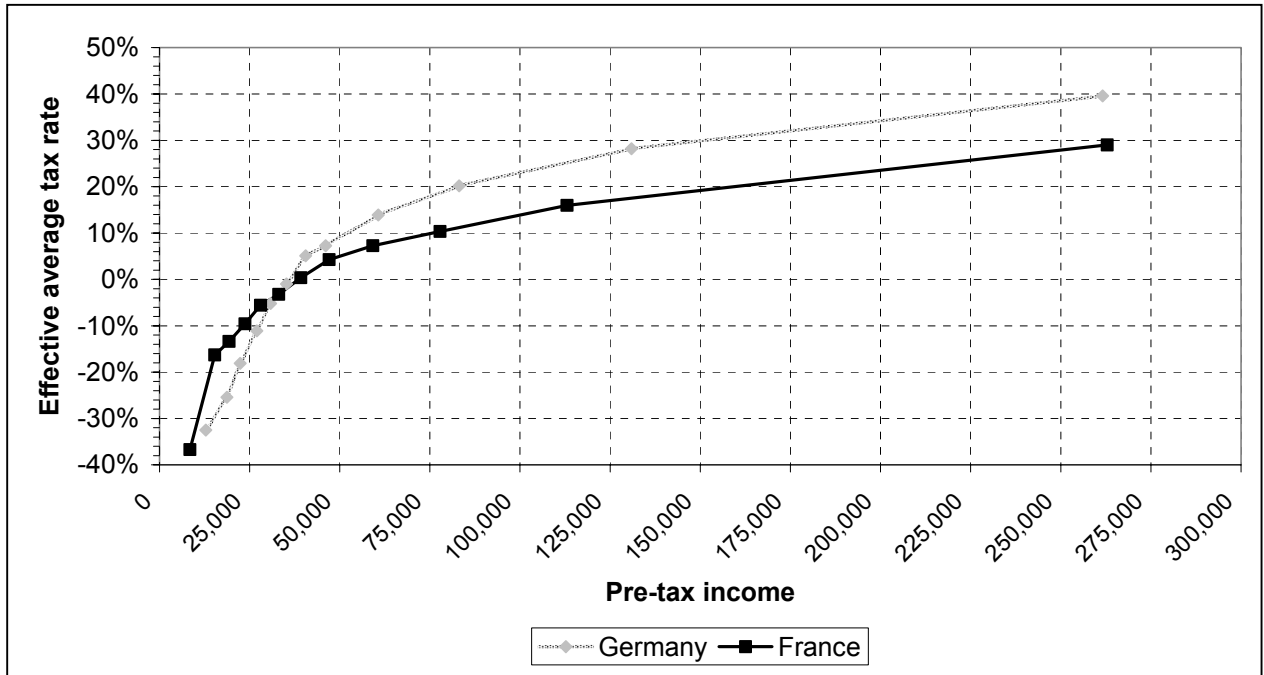
**Figure 15: Effective average tax rates, Couples with two children**



Note: Dots refer to the averages of pre-tax income and effective tax rates of the first 9 deciles and to the averages of pre-tax income and effective tax rates of P90-95, P95-99 and P99-100, respectively.

Source: Calculations of DIW Berlin and INSEE on the basis of ERF (2001) and SOEP (2002).

**Figure 16: Effective average tax rates, Couples with three children**



Note: Dots refer to the averages of pre-tax income and effective tax rates of the first 9 deciles and to the averages of pre-tax income and effective tax rates of P90-95, P95-99 and P99-100, respectively.

Source: Calculations of DIW Berlin and INSEE on the basis of ERF (2001) and SOEP (2002).