Master APE

Individualization of Taxes and Transfers and the Labor Supply Decision of Women : Simulating the Current French System and Possible Reforms

Masters Dissertation

Guillaume SAINT-JACQUES
École normale supérieure

September 2009

Supervisor: Thomas PIKETTY

Examiner: Pierre-Yves GEOFFARD

guillaume.saint-jacques@ens.fr

Abstract

In this dissertation, we build a simulator allowing to reproduce the major features of the French system of taxes and benefits. Devices included in the simulator are Income Tax, CSG, CRDS, PPE, RSA, Family Allocations, Family Complement. We provide a detailed presentation of all these devices that are central to the French system, in order to make them available to non-French speakers.

Then, we run our simulator on INSEE ERFS 2006 data in order to derive the major economic features of the existing system in terms of redistribution and marginal explicit and implicit tax rates. This analysis is conducted both at the household level (which is the one at which these devices actually operate) and at the individual level (which requires making assumptions as regards the intra-household bargaining process for the allocation of taxes and benefits). At the household level, the resulting average contribution curve is of a complex form, with kinks. The resulting marginal rate curve is, as expected, U-shaped. At the individual level, we also find U-shaped marginal tax rate curves, but more erratic due to the practice of family income splitting and its effect on second earners, and with higher marginal tax rates for women than for men at the bottom of income distribution.

Finally, we simulate various fundamental reforms of the system, that involve putting together all devices named above into a unified average tax rate scheme (as opposed to current marginal tax rate schemes), and an individual treatment of taxpayers (as opposed to the existing family income splitting system). Supposing different intensive and extensive labor supply elasticities for men and for women, we then estimate labor supply responses to these fundamental reforms, and their potential efficiency gains.

We find that fully individual tax schedules have strong perverse consequences in terms of budget balance and in terms of efficiency, mostly by increasing marginal rates at the bottom of the income distribution. Then, semi-individual schedules seem to allow for potentially significant efficiency gains, but rather concentrated at the upper middle and top of the income distribution. With a 0,5 intensive and a 0,98 extensive labor supply elasticity for women (and no elasticity for men), we find an increase in labor supply of 1,4%. However, the question of the transition between a household-based system at the bottom of income distribution and an individual one at the top, as well as the question of how the presence of children should be taken into account, remain problematic. A more neutral treament of children could raise labor supply gains up to 3%.

Remerciements

Je tiens en premier lieu à remercier Thomas Piketty pour toute son aide, sa patience et sa très grande disponibilité.
Un grand merci à Camille Landais pour une précieuse aide méthodologique.
Merci aussi à Magda Tomasini et Hélène Chaput de m'avoir permis d'accéder aux données ERFS 2006, et de m'avoir accueilli à l'INSEE.
Merci à mes parents et à ma soeur pour leur infaillible soutien.
Enfin, je suis très reconnaissant à l'École normale supérieure pour les excellentes conditions de travail qu'elle m'a offertes depuis 2006.

À Alfred Bittendiebel, mon grand-père.

Contents

(...) U.S. income tax laws have placed a large burden on the earnings of married women. When a married couple chooses to enjoy the tax advantages of filing jointly, the first dollar earned by the wife is in effect taxed at the same marginal rate as the last dollar earned by the husband. Harvey S. Rosen, 1977

1 Introduction

Women's labor supply elasticities are known to be higher than those of men. It is now considered conventional wisdom that according to Ramsey's "inverse elasticity" principle, this finding implies that women should face lower marginal tax rates than men.

However, the French joint taxation system seems to do exactly the contrary: women often being second earners, they often face, in reality, higher marginal rates of taxation than men.

There are two main factors that may help understand the persistence and the relative popularity of the joint filing system in French:

First, its design leads to potentially strong tax reductions to married couples, and practically eliminates any kind of "marriage penalty".

Second, it seems that there is a great concern about "horizontal equality", meaning that people with the same standards of living should not face different tax rates. The French system, organized around the concept of Family Income Splitting (*Quotient Familial*) is mostly aimed at that: roughly speaking, households that have the same number of mouths to feed are to be taxed equally, regardless of the distribution of income within the household.

However, without necessarily denying the importance of this kind of horizontal equality, it might be interesting to try and know at what cost it comes, mostly in terms of the efficiency losses induced by its strong distortion on the labor supply of women.

As regards taxes and transfers, the French system seems like a very complex one. It seems to be the outcome of a long series of reforms aimed at solving particular issues, rather than

the result of an unified design. As of today, it consists of a number of little devices, run by different government organs, and, according to its opponents, it has grown more and more difficult to understand for workers and taxpayers themselves.

Here are a few illustrations of the current system's complexity: some devices are aimed at the individual while others work at the household level – the concept of household being itself being subject to variations across devices –, and their eligibility criteria are not the same. Furthermore, these devices have different ways of taking into account the presence of children or spouses inside households, and the concept of income they use in order to determine tax payments or transfer entitlements is also not the same. On top of that, payment schedules are very different across devices –some taxes and benefits being paid from quarter to quarter, others with a one year delay–. All these elements make it practically impossible for a citizen to accurately forecast her actual available income at the end of the year. This complexity alone probably interferes with one's optimal labor supply decision.

Hence, the first goal of this paper is to provide a simulator, currently written in SAS language, that integrates the most significant of these devices. It aims at providing a general vision of the French system in terms of average rates of contribution (positive or negative), and marginal retention rates. This in turns sheds light on the redistribution features and effects on labor supply incentives of the existing system.

This allows to provide the non French-speaking with a presentation of the various mechanisms and features of the so-called "French system".

Then, in order to estimate the efficiency losses caused by the existing practice of family income splitting that tends to increase marginal tax rates faced by household's second earners, we simulate various reform scenarios. Our goal is to explore reform possibilities that would allow substantial efficiency gains (through the reduction of distortions induced by joint taxation), without leading to unnecessary redistributive effects, and keeping tax revenues and transfer spendings at reasonable levels.

These scenarios all have in common a simplification of the system: all studied devices (Income Tax, PPE, CSG, CRDS, RSA, Family Allocations, Family Complement) are compounded and merged into a simple, legible tax schedule – where taxes can be positive or

negative – that expresses the average tax rate as a function of gross labor income. This simplification has three main virtues: First, it replaces the numerous existing devices by one single device; second, it replaces the existing schedules that are expressed in marginal tax rates by a schedule expressed in terms of average tax rate, which makes it more legible and understandable; third, it simplifies the concept of income, by expressing tax rates as a function of gross labor income only, as opposed to today's devices, that each use a different measure of income (among gross, taxable and net income).

However, our scenarios differ by the way they deal with the issue of individualization: indeed, it is very likely that implementing some degree of individual filing will lead to efficiency gains, but it is not obvious that such a practice can be beneficial for all levels of income (especially at the bottom of income distribution).

Our scenarios do not fully deal with the issue of the optimal tax and benefit treatment of children, since this question goes beyond the scope of this study. Children-related features of the existing system are described and assessed, but the way they should be reformed does not yet seem obvious. For now, we replace all children-related gains of the existing system by a lump-sum transfer of 1780€ per child and per year (which is the average amount of children-related gains per child in the existing system), to be divided between spouses.

We first experiment a scenario that consists in a full individualization of the system, in which the computation of payment or benefits is entirely made at the individual level, and does not take household composition into account at all. Tax and benefit schedules are designed to be as close as possible to the ones already faced by single individuals in the current system (without any effect of having children or being married).

Our second scenario is close to the first one, except that the reference situation is the tax and benefit schedules currently faced by couples (as opposed to single individuals).

Given the difficulties raised by the two first scenarios, we propose a third system, based on partial individualization: higher income taxpayers would face an individual system, while lower income taxpayers would still face a household-based system. This system has the most interesting efficiency features, but raises difficulties as regards the transition between the household-based system at the bottom of income distribution and the individual-based system at the top.

For these three scenarios, we evaluate possible efficiency gains drawn from responses to changes in marginal tax rates, and give an order of magnitude for the GDP growth it could trigger.

It should be stressed that this second contribution (scenario simulation) is for exploration purposes only, and that a number of other scenarios could be investigated. Certainly, some model refining, as well as a more normative investigation of the various policy trade-offs that we face is still required.

2 Related Literature

The fundamental contribution that underlies most of the arguments and questions around individualization of tax and benefits systems is Ramsey's (1927) "inverse elasticity rule", according to which, in order to reduce distortions, goods that a are supplied inelastically should be taxed at a higher rate than goods whose supply is more sensitive to variation in prices (and hence taxation).

Various empirical studies have shown that women tend to have a more elastic labor supply than men, among which the study of Rosen (1977), quoted in the introduction. Boskin and Sheshinski (1938) have made the argument stronger, concluding that the optimal tax rate that men should face "would be roughly twice that on wives".

This debate became more present in the recent years, that lead to more polemic publications, like "Taxing Women: how the marriage penalty affects your taxes", by McAffery in 1999.

It seems that the general idea that emerges of literature is that women and men should not be taxed on a joint filing basis, and that individual or selective taxation would be better. Individual taxation means that women and men are taxed separately, but face the same tax schedule; selective taxation means that women and men not only are taxed separately, but also face different tax schedules.

Kleven, Kreiner and Saez (2007) show, in a very broad framework, that the optimal taxation of couples should follow the principle of *negative jointness*, meaning that the tax rate of one person should, in order to maximize social welfare, decrease in the earnings

of the spouse. When the first earner's income becomes large, tax on the second earner's income should even tend to zero. These results are shown in models in which the second earner makes a binary choice between entering or not entering the labor market, as well as in models where both spouses make continuous labor supply decisions. Proof is brought using much less restrictive assumptions than previous literature, since no separability in the couple tax function is assumed: the income tax may be computed depending on the income of spouses in any nonlinear fashion.

However, selective taxation faces the strongest political opposition, because taxing people at different rates seems to be against equality principles. In that respect, a recent contribution by Alesina, Ichino and Karabarbounis (2008) brought the debate further, by bringing together an analysis of within-household welfare repartition induced by various forms of taxation and an investigation of the within-household bargaining mechanisms that lead to the division of family chores and to each spouse's participation in the labor market. One strong insight of this paper is that it is likely that women's higher sensitivity to taxation in terms of labor supply needs not be a matter of individual characteristics, but could instead be the result of asymmetric bargaining power within the couple. This argument can probably make selective taxation more politically acceptable:

Indeed, as Alesina et al's contribution models this intra-household bargaining and thereby endogenizes each spouse's labor supply elasticity, it shows that there exist schemes of selective taxation (called Gender Based Taxation (GBT), and advocated as a powerful policy tool) that can help decrease aggregate distortions, increase social welfare while remaining feasible from the point of view of government budget. In that case, Gender Based Taxation corrects for "social dissonance" (Apps and Rees, 1998), between preferences of society who does not value men over women, and the yet persisting asymmetry in bargaining power, which leads to unequal access to the labor market between spouses. They show that the same results apply if the difference between men and women does not result from asymmetry in bargaining power, but from a comparative advantage of the woman in the "production of the household good" (family chores).

Hence, it may be interesting to investigate this idea in France, where joint taxation is

the general rule for couples, because of the often large fiscal incentives associated to it[1]. However, in terms of political acceptability, it might be better to begin with an study of individual taxation, before conducting an analysis of specific taxation (GBT).

A first simulation of income tax individualization in France has been conducted by Échevin (2003). Contrary to this dissertation, is focuses on income tax only. Échevin's contribution finds, in 2002 income tax data, that about 46% of married couples benefit from an average "marriage subsidy" of 1 080€ per year, and that 22% face a marriage penalty of 185€ per year. This marriage penalty is not essential to the French income tax system, and is more of a side effect of a few specific features, like the *décote* (described in section 4.2.3. This is why its amount is relatively low, when compared to the marriage subsidy faced by other couples.

Then, Échevin simulates income tax individualization while keeping the current tax schedule unchanged, and keeping intact the principle of Family Quotient (which essentially yields a per-child tax reduction that increases in the level of income, and that increases more than proportionally in the number of children declared). The outcome of such a setting is a substantial increase in income tax revenues, as well as efficiency gains. However, the idea of suppressing couple income splitting why leaving the income-splitting effect of children can seem unlikely to be implemented in the future.

Labor supply elasticities of women are then estimated with the help of wage equations and participation equations. The global results is that, taking into account the effect on the labor supply of women, individualization reduces vertical inequality (across deciles of income), and leaves horizontal inequality (across households with the same standard of living but with potentially different family structures) unchanged.

Our purpose it to conduct a broad analysis of the French system, including other taxes and transfers that play an important role in the determination of household's end-of-the-year available income. We include in our analysis different taxes or benefit devices like CSG, PPE, RSA, Family Allocations[2]. The most significant new device in terms of their

[1]Tax reductions triggered by marriage strongly reduces the number of cases where people could refuse to get married because of taxation. There is almost always an intra-household bargain in which marriage (and joint filing) makes both partners better off.

[2]these devices are described in section 4.

effect on marginal rates of taxation being PPE and RSA, which have been introduced after Échevin's study.

3 labor income distribution and the issue of second earners

3.1 Source data

In this study, we work with 2006 French data on incomes, taxes and social security benefits, called ERFS (*Enquête revenus fiscaux et sociaux*, survey about fiscal and social security incomes).

ERFS is a study that puts together different sources of information (labor market survey data, data from income tax declarations, social benefits data, data about capital incomes)[3], in order to provide a broad view of labor income, taxes and benefits of French households. It is made every year by the French National Institute for Statistics and Economic Studies, *INSEE*, on a sample of roughly 36 000 households and their corresponding 44 000 income tax declarations. Every tax declaration is linked to its originating household, so it is possible to keep track of changes in situations (like marriage or divorce) that lead people to file several tax declarations in the same year.

We mostly focus on income tax declarations, and compute other tax and benefits from these figures. This allows to build a simulator that needs to be fed little data (only those of tax declarations), and can simulate most figures (taxes, social security contributions, various benefits) from the information contained in tax declaration forms. This also provides an unified simulator in order to compute average rates and marginal rates of taxation and benefits.

Income distribution in the data has been reweighted to match the distributions described in Landais (2007), who were computed on more exhaustive French income tax data. This allows better coverage of high-income households.

Table 1 shows summary data about income aggregates, and provides a comparison between our computations and official aggregates published by the French tax administration[4].

[3] For a thorough explanation about ERFS methodology, see www.insee.fr

[4] See the sheet reproduced at the end of this dissertation, page 132

	Computed Aggregates	Official Aggregates	Ratio
Total income	884,53 Bn	886,02 Bn	99,83%
Wages	526,72 Bn	527,90 Bn	99,77%
unemployment and sickness benefits	27,39 Bn	27,24 Bn	100,53%
Pensions and rents	212,05 Bn	212,37 Bn	99,84%
Non salary-earning professions	58,90 Bn	59,48 Bn	99,02%
Land revenues *(revenus fonciers)*	20,98 Bn	20,50 Bn	102,34%
Asset income *(revenus des capitaux mobiliers)*	25,05 Bn	25,11 Bn	99,74%
Capital gains (*Plus values à 16%*)	13,40 Bn	13,39 Bn	100,10%

Table 1: Taxable income of French tax-paying households, as present in the data

Note: it should be stressed that data contained in the three last lines is quite inaccurate. Indeed, there are many tax exemptions that apply to these kinds of income, and that make a significant portion of them invisible in income tax data. What we observe here is barely one third of actual estate incomes (estimated to roughly 151 Bn € by the *Conseil des Prélèvements Obligatoires*). This is not a problem, since our work is focusing on labor income, but these tables should not be used in order to work on French estate income. The INSEE *Enquête Patrimoines* would be much more appropriate.

The amount of taxes and transfers on 2009 income is not yet fully known. Many parameters (among which the formula for income tax) will be set by next year's appropriation bill (*loi de finance*), during the fall and the winter. Therefore, in this paper, our simulation aims at reproducing the 2008 situation. Hence, we increase all revenues observed in our 2006 data by the growth of minimum wage over the two previous years, which is 5,32%[5]. Then, all taxes and benefits that we use are computed on 2008 revenues (but taking into account RSA, the device replacing the guaranteed minimum as of 2009). However, they are not all paid in 2008. For example, income tax is paid in 2009 on 2008 incomes, while most (but not all) benefits are paid immediately, on the basis of current income. Table 4.6 summarizes the timing of tax and benefit computation and payment. We come back to this issue in section 4.

3.2 Income composition: the prevalence of labor income

Table 2 summarizes actualized data on income. It shows the repartition of labor income between wages, illness and unemployment benefits, pensions and rents, income of non wage-earning workers. The concept of income presented here is taxable income, because it is the one observed in the data. The relationship between gross income, net income and taxable income is dealt with in section 4.1. In our final simulations, we shall mostly use the concept of gross income, since the simplifications we suggest will make the use concepts of taxable income and net income useless in order to determine tax rate.

In the next subsections, we present a few facts about the distribution of incomes across households, individuals, and within households. In the case of wage-earning workers, these figures can easily be converted to gross income, as explained in section 4.1. The following tables only include working-age households and individuals, between 25[6] and 65. Broader statistics, including younger people and retirees, are available in section A.1 of the appendix.

[5]This computation is quite precise for lower incomes, but a bit off for higher incomes, since minimum wage is increased by inflation plus half the gain in purchasing power of the average income. This seems like an acceptable approximation, since it little affects marginal tax or implicit tax rates facesby taxpayers, which are the most important parameters in order to evaluate efficiency gains linked to individualization.

[6]This lower limit can seem a bit arbitrary, but it is the lower limit of eligibility to many social benefits schemes, like guaranteed minimum income or RSA, that are part of our simulation. This is why we restrict the analysis to people above 25.

(in 2008 value)	**Total labour income**	**wages**	**unemployment and sickness benefits**	**pensions and rents**	**income of non wage-earners**
Aggregate income	868,9 Bn	554,8 Bn	28,9 Bn	223,3 Bn	62,0 Bn
Average income per household	24 473	15 625	813	6 291	1 745
repartition	100,0%	63,8%	3,3%	25,7%	7,1%
Average for non-zero incomes *	25 808	24 495	6 066	17 324	28 773
men's income (sum)	520,5 Bn	336,1 Bn	16,5 Bn	121,6 Bn	46,3 Bn
women's income (sum)	343,6 Bn	216,0 Bn	12,3 Bn	99,7 Bn	15,7 Bn
men's income (average) *	14 659	9 467	464	3 425	1 303
women's income (average) *	9 683	6 086	346	2 809	441
Number of tax declarations	35,50 M	22,64 M	4,75 M	12,89 M	2,23 M
Number of individuals with positive labour income	43,65 M	27,74 M	4,89 M	15,79 M	2,37 M
number of men with positive income in each category	22,01 M	14,54 M	2,44 M	6,83 M	1,62 M
number of women with positive income in each category	21,64 M	13,20 M	2,45 M	8,95 M	0,75 M
Overall number of individuals:	48 M				

Table 2: General statistics about ERFS 2006 data: repartition of labor income between wages, illness and unemployment benefits, pensions and rents, income of non wage-earning workers; and number of households and people (men and women) falling into each category

* These averages are computed without taking into account observations with zero income. Hence, the aggregate values of these variables can be found by multiplying these figures by the number of non-zero observations.

Note: from now on, all incomes are actualized to 2008 value.

3.3 Income distribution across households

Table 3 shows the distribution of labor income across households. Here again, we mean household in a fiscal sense, ie people filing a revenue declaration together. Lower deciles of income are mostly constituted by single-earners. The "age" column is the average age of all individuals belonging to the fractile. We only take into account the income of spouses. Their dependents's income is left aside for now, and is quantitatively quite unimportant (it represents 2,7 Bn €, which is less than 0,3% of taxable labor income observed in the data).

fractile *	P_f	gross income	taxable income	net income	average age
All		33 565	27 350	26 568	43,6
0-10	0	1 191	963	935	41,1
10-20	5 428	8 763	7 086	6 882	42,2
20-30	11 693	13 996	11 318	10 992	42,0
30-40	16 069	17 877	14 457	14 040	41,2
40-50	19 474	21 211	17 153	16 659	41,4
50-60	22 984	25 105	20 302	19 718	42,4
60-70	27 373	30 328	24 526	23 820	44,1
70-80	33 639	38 045	30 800	29 914	44,9
80-90	42 999	50 165	40 664	39 496	44,8
90-95	59 083	66 716	54 175	52 622	45,7
95-99	76 854	96 068	78 456	76 219	46,5
99-99.9	135 083	179 167	151 040	146 869	47,1
99.9+	308 971	532 047	473 293	460 906	47,5

Table 3: Distribution of labor income across households (tax declarations) for household head between 25 and 65 (24,35 M households)

* fractile of gross labor income
P_f is the fractile's lower limit
Net income is income actually paid

3.4 Income distribution across individuals

Table 5 represents the number of people with positive labor-related income[7] versus the number of people with null labor related income, in categories of age and gender. As we

[7]We define labor-related income as the sum labor income (a concept that, in this paper, already includes replacement income), and pensions and rents.

fractile *	P_f	gross	taxable	net	percentage of women	average age
All		23 962	19 524	18 966	50,5%	43,6
0-20	0	1 533	1 240	1 204	72,2%	43,9
20-30	7 037	10 214	8 260	8 022	62,1%	43,7
30-40	13 032	15 401	12 454	12 096	56,9%	43,1
40-50	17 534	19 230	15 551	15 103	49,9%	41,9
50-60	20 843	22 472	18 173	17 649	44,5%	42,2
60-70	24 181	26 056	21 071	20 465	41,5%	42,8
70-80	28 101	30 725	24 846	24 131	41,3%	43,6
80-90	33 769	38 286	31 030	30 139	38,4%	44,7
90-95	44 394	50 240	40 885	39 715	31,5%	45,5
95-99	58 462	75 839	62 017	60 251	22,8%	46,6
99-99.9	111 158	152 444	129 638	126 089	14,8%	48,1
99.9+	278 896	497 847	445 054	433 464	11,7%	48,2

Table 4: Distribution of labor income across individuals between 25 and 65 (34,34 M individuals)

* fractile of individual gross income.
P_f is the fractile's lower limit.

can see, about 15% of women do not have any labor-related income, which is three times as much as men. Again, it needs to be stressed that we do not observe all sources of income here (starting with social minima): this table only treats labor income.

This strong asymmetry between men and women can be attributed to countless factors. Our hypothesis here is that there is at least a portion of these numerous non-working women that would be ready to work if they faced lower marginal rates of taxation. The fact that the proportion of zero income women is highest between 50 and 65 could comfort this hypothesis, since they tend to have husbands with higher earnings, which makes them face a high marginal tax rate.

3.5 Income distribution within households: who are the second earners ?

The issue of second earners is central to our question, since in most cases the fact of being the second earner leads to higher marginal rates of taxation. This issue is illustrated in section

	Men			Women			All		
age	Y=0	Y>0	# All	Y=0	Y>0	# All	Y=0	Y>0	# All
18-24	4,54%	95,46%	1 777 085	12,38%	87,62%	1 765 885	8,45%	91,55%	3 542 970
25-29	4,79%	95,21%	2 100 225	13,85%	86,15%	2 100 163	9,32%	90,68%	4 200 388
30-39	5,61%	94,39%	4 658 873	16,52%	83,48%	4 648 122	11,06%	88,94%	9 306 995
40-49	6,21%	93,79%	4 531 307	16,78%	83,22%	4 636 367	11,56%	88,44%	9 167 674
50-59	6,32%	93,68%	4 215 250	22,04%	77,96%	4 387 982	14,34%	85,66%	8 603 232
60-64	3,03%	96,97%	1 405 786	16,52%	83,48%	1 497 609	9,99%	90,01%	2 903 395
65+	1,28%	98,72%	4 216 465	5,39%	94,61%	6 044 415	3,70%	96,30%	10 260 880
All	**4,75%**	**95,25%**	**22 904 991**	**14,34%**	**85,66%**	**25 080 543**	**9,76%**	**90,24%**	**47 985 534**

Table 5: Presence or absence of labor or pension income as a function of age and gender.

Here, Y is the sum of labor income and pension and rent income

4.2.2 about the French income tax, but applies to all taxes and benefits: being the second earner with a high revenue partner makes one directly lose eligibility to transfers like PPE, RSA, Family Complement, and so on. Table 12 in section 4.2.6 shows the proportion of women among household's second earners, and women's average share in their household's labor income, for each fractile of households. Table 13 shows the corresponding effect on marginal income tax rates.

Of course, this needs not be the case: since all benefits and taxes are paid at the household level, their repartition between spouses is determined by a within-household bargaining. As outlined by Alesina et Al [2008], labor market participation itself is the result of a within-household bargaining, meaning that the attribution of the roles of first and second earner is itself endogenous to this bargaining. One possible bargaining outcome would be that the second earner computes all the losses (benefit losses or additional amounts) she incurs because of the first earner's income, and asks the first earner to compensate her accordingly.

However, it can also be the case that second earner's income is considered as an "additional income", and that the first earner will demand to be compensated for all losses incurred by the household as a result of the second earner's activity. In this case, marginal rates of taxation faced by second earners are significantly raised. This is Rosen's (1977) idea.

The result is probably in between, depending on the bargaining power of spouses. In the rest of this study, we will focus on the second polar case: second earners are supposed to face the same marginal and average taxation rates as their household's.

4 Description of the existing devices

In the following section, we first describe French social security contributions and the corresponding differences between gross, net and taxable income. Then, we describe CSG and CRDS, which are two taxes computed on all individual gross incomes (including capital income and windfalls), directly deducted wherever possible, and which constitute a strong source of income for the State (75 Bn €). We then deal with income tax, which follows the principle of family income splitting, and approximately levied 59 Bn € in 2008.

We then turn to PPE and RSA, two forms of benefits aimed at different (but overlapping) categories of people and providing very different features. PPE provided incentives to workers, while RSA provides a guaranteed minimum income that preserves incentives to work. We finally deal with children benefits, Family Allocations and Family Complement.

All these devices are then aggregated, and their features compounded, in the next section.

4.1 Gross, Taxable, Net : The various concepts of income

In this section, we describe both the way French labor income can be decomposed, and the way this decomposition was implemented in our simulator (which required some simplifications). We first describe the computation of gross wages versus net and taxable wages, and then the decomposition of other forms of labor income, like the income of non-salary earning workers, or replacement income.

4.1.1 Wages

As shown in section 3.5, wages are the most common case on the French labor market. A gross wage can be decomposed into three main amounts: social security contributions, CSG/CRDS taxes, and net income (or amount actually paid to the worker). This does not yet include income tax payments, which are in most cases not directly deducted from income. It should be noted that, in France, most social security contributions are made by the employer. These contributions are the difference between labor cost for the employer and gross wages. A possible future enhancement of the simulator would be to include these employer-side contributions as well.

This decomposition is particularly relevant to our simulator, since the various tax and redistribution devices address different income concepts. As can be seen on the decomposition of a 1000€monthly salary in figure 1, CSG and CRDS address gross income, income tax and PPE address taxable income (whose computation we describe in the section below dedicated to income tax), and RSA addresses net, actually received income.

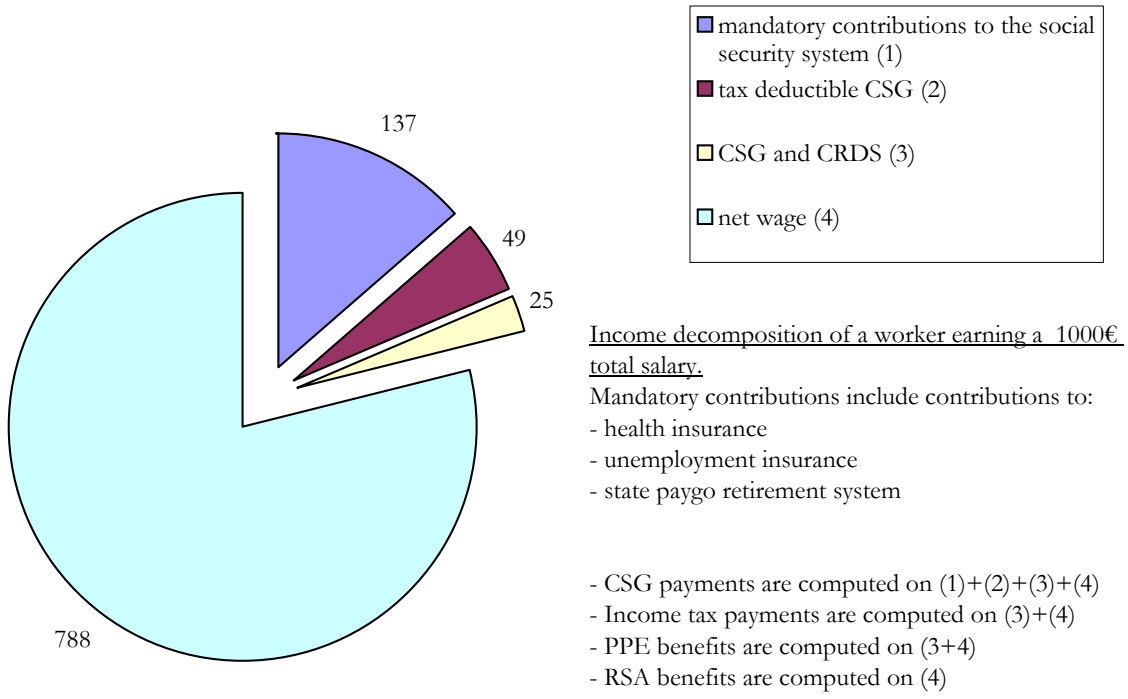

Figure 1: Social security contributions: decomposition of a 1000€ monthly salary

There are three main difficulties with this decomposition, and more precisely, with its implementation in the simulator:

- Social security contribution rates vary along two dimensions
  - the level of income
  - the status of the worker (executive/not executive, for instance)
- Although the biggest part of social security contribution is made of mandatory contributions, individuals or their employers can decide to contribute more than the

	base	rate
Health insurance, Maternity, Death	R	0,75%
Old-age insurance	$\min(R, P)$	6,65%
Addtional old-age contribution	R	0,1%
Retirement contributions	$\min(R, P)$	3,8%
	$\min(R - P, 3P)$	8,9%
Unemployment insurance	R	2,4%
CSG		
non tax-deductible	$0,97R$	2,4%
tax deductible	$0,97R$	5,1%
CRDS		
non tax-deductible	$0,97R$	0,5%

Table 6: Social security and CSG-CRDS contribution rates of "non-executive" workers, 2008

R is gross labour income; P is the social security ceiling.

mandatory minimum, which increases the gap between their gross and net income. This is in fact a way for the state of allowing voluntary contributions to be tax exempt.

- The concept of "taxable income" does not coincide with anything economically meaningful. Its exact computation is described below, but the general rule is that social security contributions are tax deductible, and that only a part of CSG of contribution is tax deductible.

Globally, social security contribution rates slowly decrease with the level of income. Every year, the government releases a number called "social security ceiling" (*plafond de la sécurité sociale*), and the various social security contributions rates are computed (in a marginal rate schedule, like income tax), from brackets made of multiples of this value. In 2008, this value was 2 773 € a month. It was increased to 2 859 € in 2009. Table 6 shows contribution rates of "non-executive" workers, as a function of their level of income and of the social security ceiling.

Taxable income **(monthly)**	Corresponding Gross income
$0 \leq R_T < P_T$	$1.237 \cdot R_T$
$P_T \leq R_T < 3P_T$	$1.237P_T + 1.213(R_T - P_T)$
$R_T \geq 3P_T$	$1.237P_T + 1.213 \cdot 2P_T + 1.095(R_T - 3P_T)$

Where $P_T = P/1.237 = 2\ 242$€

Table 7: Formula used to infer gross income level from taxable income level

We call P the social security ceiling (which is released in gross income terms) and P_t its equivalent in taxable income. We call R_t the taxable income observed in our data.

Simulation What we observe in the data is taxable income. Since we can not observe the status of the worker, we assume that all salary-earning workers are in the "not-executive" scheme. This is not realistic, but the two schemes are close enough for it to be a good approximation. As can be seen in the above table, if we assume that everyone follows the above scheme, then the function that transforms taxable income to gross income is a continuous and piecewise linear function, which can be described as this in table 7.

Then, we simply apply the contribution scheme described in table 6 to infer social security contributions, CSG/CRDS contribution, and net (actually paid) income, which we then feed to our simulators of the various devices.

In the end, our goal is to leave social security contributions intact, but to replace CSG, CRDS, Income Tax, PPE, RSA, Children Benefits with one unified and simplified system.

4.1.2 Other types of income

Pensions Pensions are subject to the same social security contributions than wages, except pension contributions and a lower CSG contribution rate (-0,9 percentage points, taken from the tax-deductible part of CSG).

Non wage earning worker's income Non wage earning workers are subject to the same mandatory contributions as wage-earning workers, but contribution rates and brackets are not the same and, more importantly, non wage-earning workers pay both the employee contributions and the employer contributions. There is variability within the category of non

wage-earning workers. Typically, small retailers are not subject to the same contribution rates than doctors of lawyers.

For now, in our simulator, we assume that contribution rates average the same than those of wage-earning workers. This amounts to putting all the variability of contribution rates on the employer-side, and recreating a "gross income" for non-wage earning workers that can be compared with those of wage-earning workers.

Replacement income In most cases, replacement income are subject to the same social security contributions that wages, but CSG tax rate is reduced by 1,4 percentage point (this reduction is taken from the tax-deductible part of CSG).

4.1.3 CSG and CRDS

CSG and CRDS are taxes created in 1991 and 1996, and that have bean regularly increased ever since. As of 2008, the CSG schedule is as follows:

	tax base	deductible CSG	non deductible CSG	CRDS
wages	97% of gross wage	5,1%	2,4 %	0,5%
pensions		4,2%	2,4%	0,5%
replacement income	6,7%	3,8%		0,5%

Windfall and capital income are subject to higher rates.

4.2 Income Tax

The French income tax (*impôt sur le revenu*) is paid either monthly or every quarter, and its base is the taxable income (*revenu imposable*) of the previous year. In 2009, French taxpayers are paying income tax based on their 2008 income. Income tax is computed on a household basis: married couples, families with children, or couples bound by a PACS[8] (*Pacte Civil de Solidarité*) file a joint declaration, and their tax amount depends on the sum of their individual incomes as well as of the structure of the family.

[8]The PACS is a contract binding two individuals in a similar, but more flexible way than marriage. It is also available to same-sex couples.

The concept of household used by the tax administration (one *foyer fiscal* is a group of people filing their tax declaration together) is not the same than the one commonly used, which is people actually living together. Indeed, when a child starts to work without leaving her parent's home, the family can decide between keeping her in the joint tax declaration, or filing two separate declarations (one for the child, the other for the family), depending on what results in the smallest overall tax amount. Hence, there are approximately 30% more income tax declarations than actual households. In 2006, there were approximately 35,5 millions tax declarations, and 26,4 millions households[9].

The overall tax return was 54 Bn € in 2006, and close to 59 Bn € in 2008.

4.2.1 Determination of taxable income

In this dissertation, we focus on the taxation of labor income, and leave taxation of capital income aside. For people earning salaries, the determination of taxable labor income is quite straightforward : most of the mandatory contributions to the social security system do not enter the tax base, with the exception of "not deductible CSG and CRDS", which approximately weigh 2,1% and 0,5% of gross labor income. For more detail about the computation of these two contributions, see section 4.1.3. Similar – but much more complex – rules apply to independent workers, farmers, and very small businesses. They define different categories of income, and impose that deficits may only be taken away from incomes of the same category. Hence, if a person loses money on her commercial income (as a small retailer, for example), she still needs to pay a tax on her wage income, whatever the size of these losses. Large deficits can be deduced over several years of income. These rules have been taken into account in the simulator.

Generally, retirement benefits and unemployment benefits are taken into account in the tax basis. However, social minima, like the old-age minimum (*minimum vieillesse*, given to old people with very low retirement benefits), the guaranteed minimum income (*revenu minimum d'insertion*), and the new RSA, are not taken into account in the determination of taxable income.

[9] According to INSEE ERFS data

Every worker receives a sheet from her employer or employers that gives her the exact amount of her taxable labor income. Then, every taxpayer is entitled to a 10% deduction on behalf of her professional expenses. Higher deductions are granted to people with higher expenses, if they provide a full record of these expenses.

To sum up, broadly speaking, in the case of wage earners with no capital income, income tax is computed on 90% of one's taxable income, which his itself roughly 81% of gross labor income. As explained in section 4.1, this 81% ratio tends towards 91% for very high incomes.

4.2.2 Computation of income tax amount: the logic of "Family Income Splitting"

The concept of family quotient The entire income tax system relies on the concept of "family quotient" (quotient familial), which is used to achieve family income splitting. It is defined as taxable income divided by a number of "shares" (*parts de quotient familial*), which depends on the family structure. This ratio is the amount that is eventually taken into account in the computation of tax rate.

$$FQ = \frac{taxable\,income}{number\,of\,shares}$$

The computation of the number of shares depends on many criteria, like the presence of a spouse, the number of children[10], disability, or the fact of being a single-parent. In the general case, this number is computed as follows: singles are given one share, while couples are given two. Then, the couple's two first children each weigh 0.5 shares, and every other child weighs 1 share. In the case of single parents, the first child weighs 1 share, the second 0.5, and every other child weighs 1 share. Figure 8 summarizes the general case :

Particular cases include widows, that have the same FQ they had when their partner was alive. An additional 0,5 share is also given to every dependent that satisfies one or several of the following criteria:

- disabled dependent

[10]What we call children is in reality a broader category: it can include young unmarried adults (below 21, or 25 for students), as well as dependent people, like disabled people or old parents. We call this category "children" for simplicity, because it is the most frequent case.

family situation	number of children					
	0	1	2	3	4	additional child
single	1	2	2,5	3	4	+1
couple	2	2,5	3	4	5	+1

Table 8: Determination of the number of shares used in the computation of income tax.

- wounded veterans
- veterans over 75

This means that if a family has two people satisfying these criteria, it is given 1 entire additional share, and so on. However, the fact that one person enters into several categories does not change the amount of half shares she receives: it is limited to one half share per person.

Computation scheme Once the number of shares is computed, the tax rate is computed as follows:

$$Tax = f(\frac{taxable\,income}{number\,of\,shares}) \cdot number\,of\,shares$$

The function f being defined through a marginal rate scheme, described in table 9:

Portion of income	Tax levied on this portion of income
0 - 5 852	0%
5 852 - 11 673	5,5%
11 673 - 25 926	14%
25 926 - 69 505	30%
69 505 and above	40%

Table 9: Income tax scheme of 2009

Example 1: a single person earning 15 000 € a year pays the following amount:

$$Tax = 5852 \cdot 0\% + (11673 - 5852) \cdot 5,5\% + (15000 - 11673) \cdot 14\% = 786€$$

Example 2: A couple earning 30 000 € a year pays the following amount:

$$f(\frac{30\,000}{2}) \cdot 2 = 786 \cdot 2 = 1\,572€$$

As can be seen with these examples, the French income tax system provides strong incentives to marriage, as opposed to others, where the existence of a " marriage tax " is a

concern [Alm et al, 2004]. This has been a major argument for the implementation of the PACS, a contract allowing couples (including same-sex couples) to benefit from this system under less strict conditions than regular marriage. This system provides potentially strong subsidies to marriage and children, that are increasing with the level of income. The "marriage subsidy[11]" is not bounded, but the "children subsidy" is limited to 2 292 € per children-related share. For example, if a couple has two children (each weighing 0,5 shares in the current system), the difference between the amount that would be paid if the couple had no children and the amount that is actually paid can not exceed 4 584 €.

Figure 2 shows the tax amount paid as a function of taxable income[12], between singles and couples. It shows that if income is kept constant, a couple pays much less income tax than a single.

Figure 3 shows the tax amount paid as a function of taxable income and the number of children. We can see that, as explained above, the children-related tax deduction is increasing in the level of income, but bounded above by 2 292 € times the number of children-related shares. We deal with the issue the gains resulting of the presence of children, in all studies devices, in section 5.4.

4.2.3 Additional tax reduction for low income households (*décote*)

After the theoretical tax amount T' has been computed, if the amount due is lower than 862 €, an additional tax reduction is granted (*décote*), which amounts to the difference between 431 and half the theoretical tax amount.

$$T = T' - (\frac{862}{2} - \frac{T'}{2})$$

Effects and side-effects of this additional tax reduction are shown in section 4.2.5.

[11] This is no official term, and is not used by the tax administration. We call "marriage subsidy" the tax reduction that results from marriage in the current design of French income tax. Similarly, there is no clear information provided to taxpayers as regards the tax gain provided by their children; our "no children" computation is purely contrafactual, and is normally not given to the taxpayer.

[12] net of working expenses

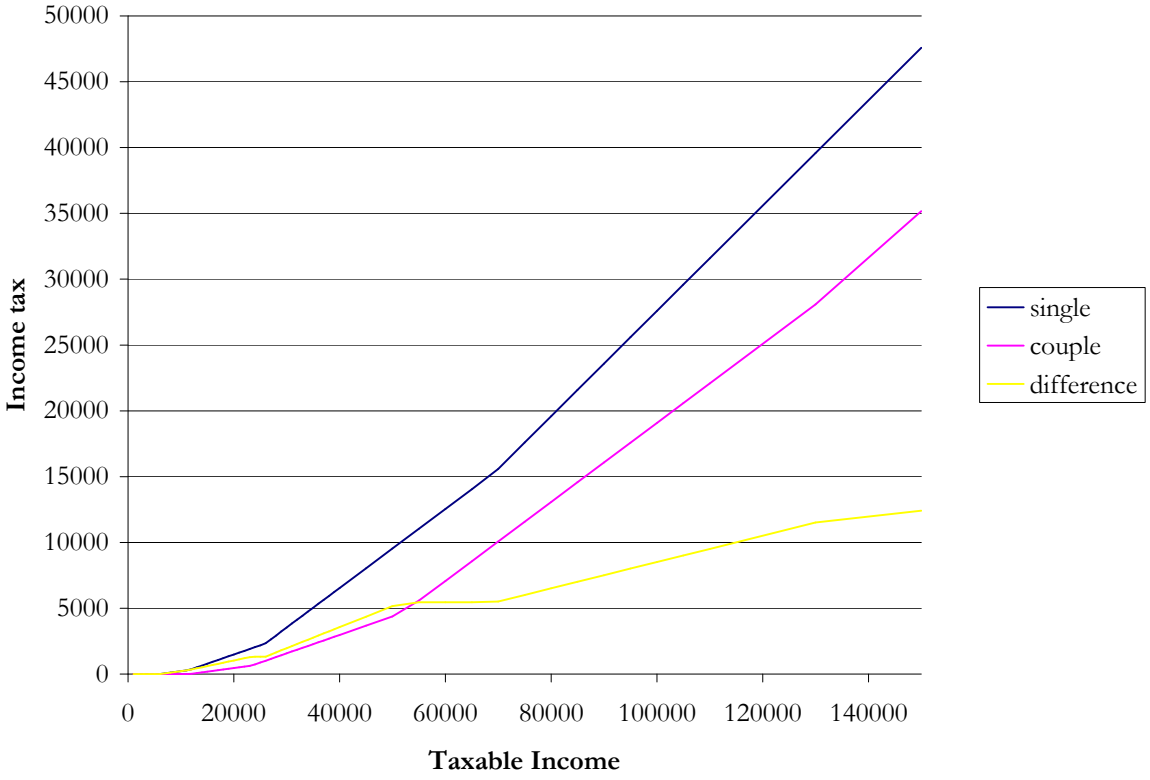

Figure 2: Income tax as a function of household taxable income, for singles and couples without children

4.2.4 Average contribution rates

Table 4 shows average contribution rates by fractile of household income. We compute each household's contribution, with and without children. Note that the amounts we present here correspond to what we described above, which is not exactly equal to what taxpayers actually pay, because we did not take into account the numerous tax deductions. As opposed to professional expenses, which are deducted from taxable income, tax reductions are directly deducted from the due tax amount. For example, a 100€ donation to a charity results in a 60€ reduction in due income tax. There is a large number of such specific tax reductions, which we do not yet include in the simulator because of their simplicity. This should however be done in future research, since tax reductions are important as well in terms of households enjoying them (13,7 Millions in 2007[13], as in terms of the amounts

[13] 2007 income tax, on 2006 income

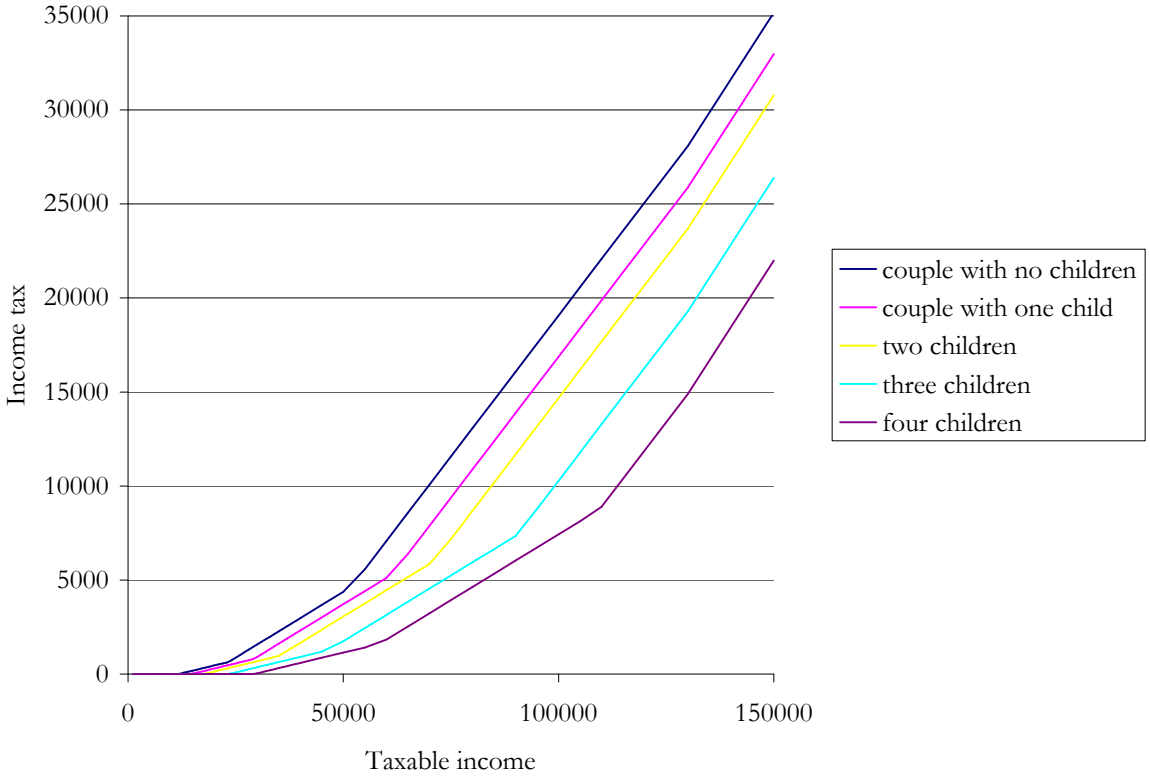

Figure 3: Income tax paid by couples as a function of taxable income and number of children

involved (20,7 Bn € were subject to such partial deductions in the same year)[14].

In this table (4), one can see two main effects: first, the tax reduction provided by the presence of children can be significant: it represents, on average, about 4 000 € for the richest 0,1% of the population (in terms of labour income). We can also see that these gains are strongly increasing with income.

This table also illustrates how progressive the current income tax system is: most deciles have a very low average contribution rate, and this rates only shows a strong increase at the very top of the income distribution: fractile 99-99.9 has an average contribution rate of 16,7% (of gross labour income), whereas fractile 99.9+ has a 28,9% contribution rate, which would correspond to the nominal 40% tax rate if it was expressed as a funciton of net taxable labor income, and not of gross labor income.

[14] According to official statistics of the French government: http://www2.impots.gouv.fr/documentation/statistiques/annuaire2007

However, it should be noted that this device coexists with other devices that are neither progressive (like CSG) nor providing children benefits that increase with income (like RSA, PPE, or Family allocations and family quotient). This is what makes a more global analysis necessary, in order to see what effects are dominating, once all devices work together. This is done in section 5.

fractile of households	P_f	gross labour income	taxable income	income tax		income tax (no children)	
		29 994	**21 698**	**1 558**	**(5,2%)**	**1 861**	**(6,2%)**
0-10	0	1 442	961	0	*(0,0%)*	0	*(0,0%)*
10-20	5 428	8 866	6 369	0	*(0,0%)*	0	*(0,0%)*
20-30	11 693	13 972	10 043	4	*(0,0%)*	5	*(0,0%)*
30-40	16 069	17 847	12 675	133	*(0,7%)*	167	*(0,9%)*
40-50	19 474	21 168	14 965	334	*(1,6%)*	438	*(2,1%)*
50-60	22 984	25 076	17 791	572	*(2,3%)*	726	*(2,9%)*
60-70	27 373	30 306	21 631	893	*(2,9%)*	1 084	*(3,6%)*
70-80	33 639	37 997	27 169	1 403	*(3,7%)*	1 740	*(4,6%)*
80-90	43 002	50 100	35 869	2 370	*(4,7%)*	2 971	*(5,9%)*
90-95	59 090	66 689	48 293	4 089	*(6,1%)*	4 926	*(7,4%)*
95-99	76 863	95 842	70 708	8 948	*(9,3%)*	11 030	*(11,5%)*
99-99.9	135 141	179 090	139 204	29 932	*(16,7%)*	33 534	*(18,7%)*
99.9+	309 114	535 518	454 097	154 927	*(28,9%)*	158 825	*(29,7%)*
Sum (all, Bn€)		**1 064,9**	**770,4**	**55,3**		**66,1**	

Figure 4: Average contribution rates by fractile of households, income tax, 2009 scheme

Average tax rates are expressed as a function of gross labor income, which explains why they do not tend towards the nominal 40% on top fractiles.

4.2.5 On the residual marriage penalty

As can be seen in the *décote* formula above, the number of people living in a household, which is otherwise taken into account for income splitting, does not appear in the computation of the *décote*. This leads to a small but sometimes significant marriage penalty, since two people earning the same income and enjoying a deduction on behalf of *décote* stop receiving that deduction if they decide to get married (and hence to file jointly). Table 10 shows a simulation of this marriage penalty in the case of spouses earning the same income:

gross income	base tax*	individual décote	resulting tax	couple decote	resulting tax	marriage penalty
8000 and below	0	414	0	414	0	0
9000	80	394	0	373,5	0	0
10000	162	373,5	0	333,5	0	0
11000	242	353,5	0	293	0	0
12000	322	333,5	0	253	69	69
13000	402	313,5	0	212,5	190,5	190,5
14000	484	293	0	172,5	310,5	310,5
15000	564	273	18	132	432	414
16000	650	251,5	147	89	561	414
17000	854	200,5	453	0	855	402
18000	1060	149	762	0	1060	298
19000	1264	98	1068	0	1265	197
20000	1470	46,5	1377	0	1469	92
21000 and above	1674	0	1674	0	1674	0

Table 10: Marriage penalty and marriage subsidy

This table compares, for several levels of gross income, the income tax paid by a couple formed of two individuals earning exactly the same income to sum of the individual taxes paid by the same people if they do not file jointly.
* In the case of two people earning the same income, "base tax" (which corresponds to income tax obtained by applying f, before applying the *décote*) is the same, whether they file jointly or not.

If two people A and B earn the same gross income Y_G, then the marriage penalty amounts to:

$$T(2Y_G, 2) - 2 \cdot T(Y_G, 1)$$

Where T is the income tax function described above in this section (as f), its first argument is the gross income, and its second the number of people then income is split between. This is the computation presented in the last column of table 10, as well as in figure 5.

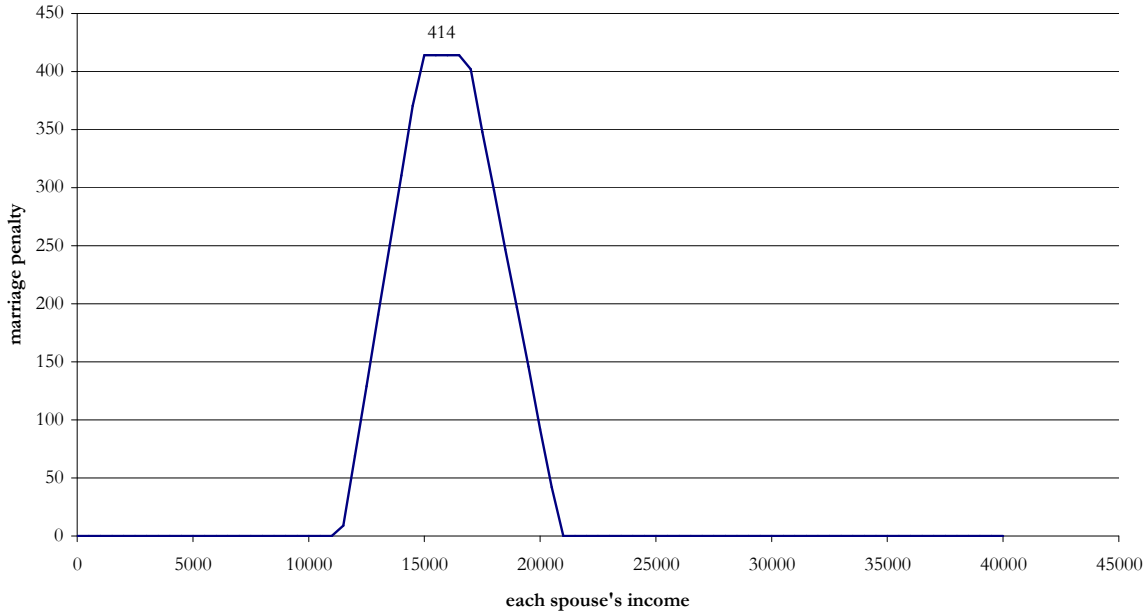

Figure 5: Marriage penalty of same-income couples, as a function of gross individual income.

Of course, the results change a lot when there is a strong income gap between spouses, because the effect of income splitting dominates the effect of décote. Hence, table 11 estimates marriage penalty and marriage gains actually faced by French households, given their respective income decompositions (without taking into account the additional income-splitting effect of children), on 2006 ERFS data (in 2008 value and with the 2009 tax schedule):

Again, joint filing is mandatory (and generally beneficial) for married or PACS couples, so there is no flexible way for a household to switch from joint filing to individual filing.

marriage penalty	number of households	average penalty
negative	10,3 M	-935 €
positive	2,4 M	162 €

Table 11: Computation of marriage penalty and marriage gains among joint files

This table compares the amount paid by couples (without the effect of children) to the amount these couples would pay if they filed separately.

4.2.6 The effects of joint filing on individual marginal tax rates

The main advantage of the current income tax design is that it makes it very straightforward for taxpayers to know their marginal tax rate. However, the fact that it is organized around joint filing and family income splitting can also lead to substantial increases in marginal tax rate of household's second earners.

For example, a woman earning a gross labor income of 10 000 € per year faces a 10% marginal tax rate if she lives alone, but a 40% if the sum of her income and her husband's reaches the fourth tax bracket. Otherwise stated, in the French income tax system, joint filing is almost always profitable from the point of view of the household in terms of average tax rate, but provides strong disincentives to work to second earners. Given that second earners are, most of the time, women (see table 12 for an illustration on French ERFS data), and that women's labor supply is known to be more sensitive to taxation than men's, this leads to a substantial distortion as regards the labor supply of women, and possibly strong efficiency losses.

Table 13 shows, for married couple with positive income and without children, the average marginal rate of income tax of the household, and then the contrafactual average marginal tax rate that each spouse would face if they had filed their income declaration separately. The striking fact is that in most cases, joint filing leads to a reduction in the marginal tax rate faced by the man, and in a rise in the marginal tax rate faced by the woman.

If we accept that women's labor supply have a higher sensitivity to taxation than men's, then this goes against the Ramsey criterion for optimal taxation, that implies people with

fractile (first earner)	fractile lower limit	fractile average first earner labor income	part of the second earner in household income	proportion of women among second earners
All		27 835	27,14%	81,65%
0-10	5	6 936	28,98%	78,49%
10-20	10 305	12 500	29,41%	81,16%
20-30	14 378	15 727	30,96%	82,46%
30-40	16 964	18 155	31,45%	82,09%
40-50	19 348	20 587	32,14%	79,89%
50-60	21 858	23 271	32,63%	78,45%
60-70	24 802	26 640	31,67%	79,69%
70-80	28 701	31 382	30,84%	80,74%
80-90	34 594	39 878	27,73%	84,71%
90-95	47 312	54 358	23,11%	87,95%
95-99	63 907	83 900	17,77%	89,32%
99-99.9	125 983	179 477	10,28%	91,22%
99.9+	339 833	637 186	4,39%	91,93%

Table 12: Couples with positive labor income: share of second earner's taxable labor income in total household labor income and proportion of women among second earners, ranked by fractile of labor income of the first earner.

a higher labor supply elasticity with respect to taxation (here, women) should face lower marginal tax rates than people with a lower elasticity (men).

We will come back to this phenomenon in the next section of our study, in which we compute marginal tax rates taking into account more taxes and the most significant benefits.

4.3 PPE

The PPE (*Prime Pour l'emploi*, which could approximately translate to Subsidy for Employment), is a device aimed at reducing tax rates on lower income workers, providing higher incentives to enter the labor market or to raise one's labor supply. It was introduced in 2001 by the left-wing government of Lionel Jospin, and was extended by right-wing governments since then.

It is to be paid in 2010[15] to people who worked in 2009. However, people who find themselves in difficult conditions, like people currently exiting unemployment, can be paid

[15]Different schemes are available (monthly, quarterly, ...), but the one-year delay remains the rule, and it allows to minimize the number of transactions by deducting PPE benefits from taxpayer's due income tax.

fractile	P_f	Y_m	Y_w	share of the woman	R_h	R_w	R_m
All		23 445	10 807	31,55%	15,4%	12,2%	18,7%
0-10	0	6 650	1 998	23,10%	0,0%	0,2%	0,7%
10-20	13 418	11 601	3 969	25,49%	0,1%	1,7%	8,3%
20-30	17 518	14 842	4 432	22,99%	5,1%	2,0%	11,8%
30-40	21 126	17 046	5 947	25,86%	7,4%	2,5%	12,4%
40-50	24 886	18 777	8 093	30,12%	14,1%	4,9%	13,0%
50-60	28 904	20 704	10 462	33,57%	12,6%	8,9%	13,8%
60-70	33 445	23 232	12 795	35,52%	12,6%	11,3%	16,4%
70-80	38 797	26 361	15 790	37,46%	12,6%	12,6%	17,6%
80-90	45 966	32 695	18 691	36,37%	14,8%	14,0%	20,9%
90-95	58 543	42 502	22 148	34,26%	26,4%	17,3%	25,0%
95-99	72 838	62 845	26 312	29,51%	26,9%	22,1%	29,1%
99-99.9	124 012	127 717	38 657	23,23%	32,8%	28,6%	35,0%
99.9+	292 832	465 240	81 073	14,84%	36,0%	33,9%	35,9%

Table 13: The issue of second earners: actual and contrafactual marginal tax rates of second earners

Married couples with positive income and without children (approx 6 Millions households).
(Y_w): average share of the woman's income in household labor income($Y_w + Y_m$)
(R_h): marginal tax rate of the household,
(R_w): marginal tax rate the woman would face if was single.
R_m is the marginal rate the woman's husband would face if he was single.
P_f gives the lower bound and each fractile.

Note: the theoretical 40% marginal rate is never reached because of the 10% deduction on behalf of working expenses.
Note 2: A methodological explanation about the computation of these average marginal rates is available in section H of the appendix.

The fractiles presented here are fractiles of households (couples).

an advance on their PPE amount (400€) directly in 2009, and the remainder in 2010.

The PPE system is considered complex, because it mixes criteria about household global income with criteria about individual income. More specifically, the biggest part of PPE is computed taking into account individual income only, but eligibility conditions are checked against household income, and there exist specific increases that depend on the family structure that are granted at the household level.

4.3.1 Eligbility conditions

In order to be eligible to PPE, workers must belong to a household whose overall taxable income does not exceed 16 251 € for singles, and 32 498 € for couples. This amount is increased by 4 490 € for each additional fiscal half part of the household[16]. This is one of the reasons that leads young workers to leave their parent's fiscal household: not doing so makes them lose eligibility to PPE benefits.

4.3.2 Base PPE benefit

If a household satisfies the above eligibility conditions, PPE benefits are computed individually, for every worker's labor income, and then summed up and paid at the household level. The logic is, in a way, similar to the "Family Quotient", because benefits are computed on the basis of "full-time equivalent" income. If a person does not work full time, then her income is first converted to full time income, and the PPE formula is then applied to the full-time equivalent amount, as shown below:

$$PPE = g(\frac{Y_L}{\alpha}) \cdot \alpha$$

where $\alpha = 1$ if the person works full time, 0.5 if she works half time, and so on[17]. The exact computation of α is described in section D.1 of the appendix.

Then, the function g is defined as shown in table 14:

[16]The concept of fiscal parts, a value increasing in the number of children, which is at the center of the French income tax system, is described in section 4.2.2.

[17]In order to compute α, the tax administration computes $\alpha = \frac{hours\,worked}{1800}$, and an equivalent formula with the number of days worked.

Family situation	R	PPE Base Benefit
single people *or* couples where partners are both working *or* households with one dependent earning more than 3 743€ a month	3 743 $\leq R <$ 12 475 12 475 $\leq R <$ 17 451	$R \cdot$ 7,7 % (17 451 - R) $\cdot$ 19,3 %
Couple where only one person is working	3 743 $\leq R <$ 12 475 12 475 $\leq R <$ 17 451 17 451 $\leq R <$ 24 950 24 950$\leq R <$ 26 572	($R \cdot$ 7,7 %) + 83 € (17 451 - R)$\cdot$ 19,3 % + 83 € 83 € (26 572 - R) $\cdot$ 5,1 %
Single parents *(parents isolés)* and special cases	3 743 = R = 12 475 12 475 $\leq R <$ 17 451 17 451 $\leq R <$ 26 572	($R \cdot$ 7,7 %) (17 451 - R) $\cdot$ 19,3 % 0 €

Table 14: Determination of PPE base benefits

R is the "full-time equivalent" individual labor income:

$$R = \frac{Y_L}{\alpha}$$

In the simplest case (single full-time worker) this results in the base benefit function, shown in figure 6. As can be seen, the fade-in/fade-out construction leads to ambiguous effects of implicit marginal rates of taxation. A person whose yearly full-time equivalent income is below 17 451 € faces a negative implicit marginal rate of taxation[18], of -7,7%, while a person earning more faces a 19,3% marginal rate of implicit taxation.

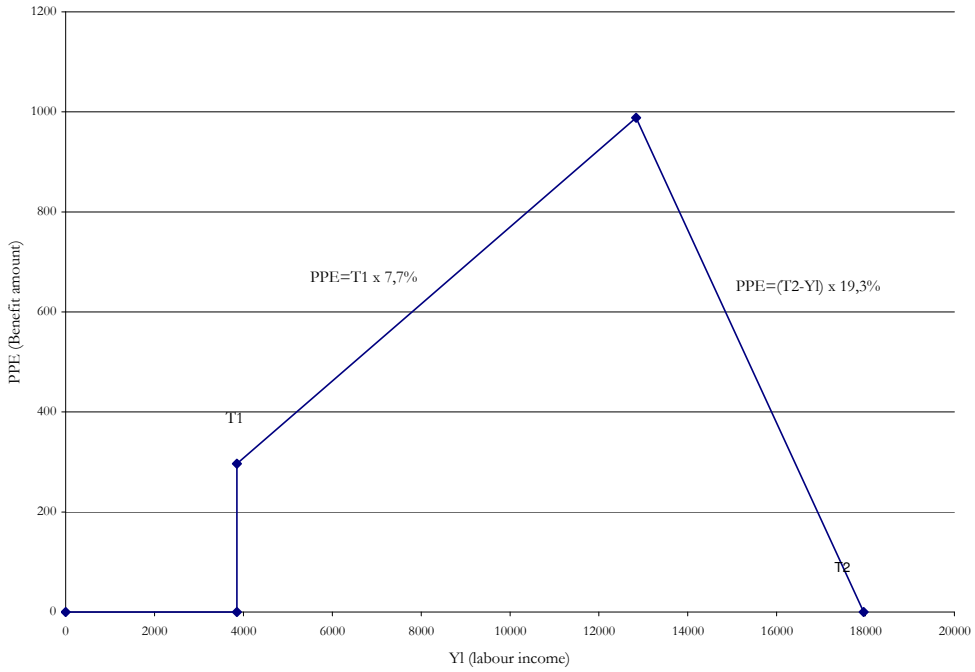

Figure 6: PPE formula in the simplest case (full-time worker)

4.3.3 Increases (*Majorations*)

One the base PPE benefit is computed, a few increases, given once at the household level[19], can apply depending on the level of income and the family structure. Generally, they provide a small lump sum benefit on behalf of each dependent of the household. After a certain level of income, it becomes a small lump-sum that no longer increases in the number of dependents. Table 15 summarizes the schedule:

[18] Implicit marginal rate of taxation is the loss of PPE benefits triggered by a small variation in labor income.
[19] Increases are computed for each PPE beneficiary of the household, but only the most beneficial one is applied, and given to the household as a whole.

Family situation	R	Increase
single people	$3\,743 \leq R \leq 12\,475$	
or couples where partners are both working	$12\,475 < R \leq 17\,451$	
and households with one dependent earning more than 3 743€ a month		36€ per dependent
Couple where only one person is working	$3\,743 \leq R \leq 12\,475$	
	$12\,475 < R \leq 17\,451$	
	$17\,451 < R \leq 24\,950$	36€ per dependent
	$24\,950 < R \leq 26\,572$	
Single parents and special cases *(parents isolés)*	$3\,743 \leq R \leq 12\,475$	72€ for the first dependent
	$12\,475 < R \leq 17\,451$	and 36 for the others
	$17\,451 < R \leq 26\,572$	72€

Table 15: Schedule of PPE increases

These increases are granted once, at the household level

4.3.4 Simulation results

Table 16 presents a comparison between the aggregates found in the simulation and known 2008 PPE data. The computation of PPE spendings is quite accurate (with a 0,1 million precision) but the number of concerned households we find is slightly off. This might be due to the fact that the only data available are 2006 data: a more precise actualization to 2008 value could reduce this gap.

A more thorough analysis of the effects of this device on marginal rates of taxation, and more importantly of its interaction with RSA will be presented in section 5.

As can be seen in figure 6, PPE does not address the bottom of the income distribution, since people earning less than 3 743 € (typically the income of people working around 30% time at minimum wage). These people are much more concerned by the device we describe next, the new guaranteed minimum income, or RSA.

fractile	P_f	# Eligible households	PPE benefits (Billions)
All		**8 318 969**	**4,6**
0-10	0	384 946	0,1
10-20	5 428	1 821 218	0,9
20-30	11 693	1 646 810	1,2
30-40	16 069	1 993 275	1,1
40-50	19 474	706 091	0,3
50-60	22 984	447 937	0,2
60-70	27 373	653 656	0,4
70-80	33 639	665 012	0,4
80-90	43 002	0	0
90-95	59 090	0	0
95-99	76 863	0	0
99-99.9	135 141	0	0
99.9+	309 114	0	0

Table 16: Summary statistics on our PPE computation

P_f is the lower limit of the fractile, expressed in gross income
We find an aggregate amount of 4,58 Bn € on behalf of PPE, which corresponds to actual 2008 PPE spendings, and 8,3 Millions of households benefiting from PPE benefits, which is a bit less than the actual number (8,9M)

4.4 RSA

The RSA *Revenu de solidarité active* is a device that replaces the existing Guaranteed minimum income (RMI), bringing several economic improvements in terms of incentives to labor supply.

4.4.1 The Minimum Guaranteed income

The first version of the Guaranteed minimum income had been designed in 1988 for approximately 400 000 people, and has grown inadequate for the 1,2 M people who were receiving its benefit in the 2000s.

The most frequent critique that was put forward against it was the disincentives to labor supply that it produced. Indeed, it was at first conceived as a supplemental income that would allow every beneficiary to reach a certain level of income (454,63€ as of 2009), an its potential as an inactivity trap was first not taken into account. Its base formula of the RMI was the following:

$$RMI = C_F \cdot \bar{Y} - Y \qquad \forall Y < \bar{Y}$$

Where $\bar{Y}$ is the guaranteed minimum level of income, and Y is the beneficiary's other income. C_F is a coefficient that depends on the family situation. It is above 1, and increases with the presence of a spouse and the number of children. This means that, for small variations in income, the implicit marginal tax rate faced by the beneficiary is 100%:

Let Y_T be one's total income (RMI included): $Y_T = RMI + Y$. So in the case of a person having no labor income, entering the labor market and earning an amount less than $\bar{Y}$ yields, in the end, the same total income $Y'_T = (RMI_0 - \Delta Y) + (Y + \Delta Y) = Y_T$. All of the increase in income is swallowed by a reduction in benefit amount.

Various measures existed, in order to counteract this effect : temporary measures (*intéressement*, and then *prime de retour à l'emploi*) allowed beneficiaries to accumulate their benefits and their labor income for a few months, hence facilitating the transition back to activity. However, this temporary effect was criticized for not being strong enough, because when averaged over several years, marginal rates of implicit taxation induced by the RMI

system were still very high.

Another set measures existed, that gave beneficiaries the obligation to actively search for a job, and to respect an individual "insertion contract". This set of rules still applies to the new system.

4.4.2 The new system and its reduction of marginal rates

The new system, introduced in mid 2009 and called RSA, yields an in-depth reform on the RMI, in the sense that marginal rates of implicit taxation is directly taken into account in the computation formula, and chosen every year by a government decision.

As of 2009, the formula is as follows :

$$RSA = max(0, \bar{Y} \cdot C_F - \beta Y_L - Y_O)$$

where $\bar{Y}$ is the same amount as in the old system (454,63€ in 2009), Y_L is one's labor income, Y_O is one's other sources of income, and C_F is a coefficient above 1, depending on the household family situation. The rate β is, as of 2009, of 38%.

Table 17 shows the formula according to which C_F is determined.

situation	C_F
Single person	1
First dependant (spouse or firstchild)	+0,5
Second dependant	+0,3
Third Dependant	+0,3
Additional dependant	+0,4
Single parents *	1,284
Each child	+0,428

Table 17: Determination of RSA base benefit as a function of family situation

Exemple : a couple with two children has a coefficient of 1 + 0,5 + 0,3 + 0,3 = 2,1
* See the note about the category "single parent" below

Contrary to what happened with the previous system, an increase in labor income from 0 to 100€ a month yields an increase of end-of-the-month total income by $100(1-\beta) = 62$€.

This is is still a low retention rate (as we show in section 5, it is comparable to retention rates on very high and heavily taxed incomes), but is still much better than the previous 0%.

The "other income" category, denoted above as Y_O, includes all sources of income that are not linked to labor, and are hence subject to a 100% deduction of RSA benefits. This the case for capital income or family benefits, but also for all social minima. This 100% deduction of other social minima is very useful for our simulation, since it makes the issue of unobserved social minima income less problematic for the realism of our RSA simulation. This issue is discussed in the next subsection (4.4.3).

Full deduction is also the rule for a part of housing benefits received by households. The part of housing benefits that is deducted from RSA benefits is fixed every year under the name of *forfait logement*, and depends on the family situation according to the scheme presented in table 18.

Note about the "single parent" status:
The status of "single parent" does not apply to every person that is single and has children. In order to be considered as a single parent (and receive the benefits that are linked to this status), one needs to fulfill the following criteria:

- Have at least a child (or be pregnant)
- File one's tax declaration as single.
- Not live with a partner (even unofficial; controls are in principle possible.)

Family situation	Housing Deduction *forfait logement*
Single person	54,56 €
Couple without children, or single parent with one child	109,11 €
Other situations	135,03 €

Table 18: Deduction on behalf of housing benefits (*forfait logement*)

4.4.3 RSA Simulation results

Table 19 presents the results of our RSA simulation. We find a total spending of 19,78 Bn €, which is much higher than the amount announced by the government (approximately

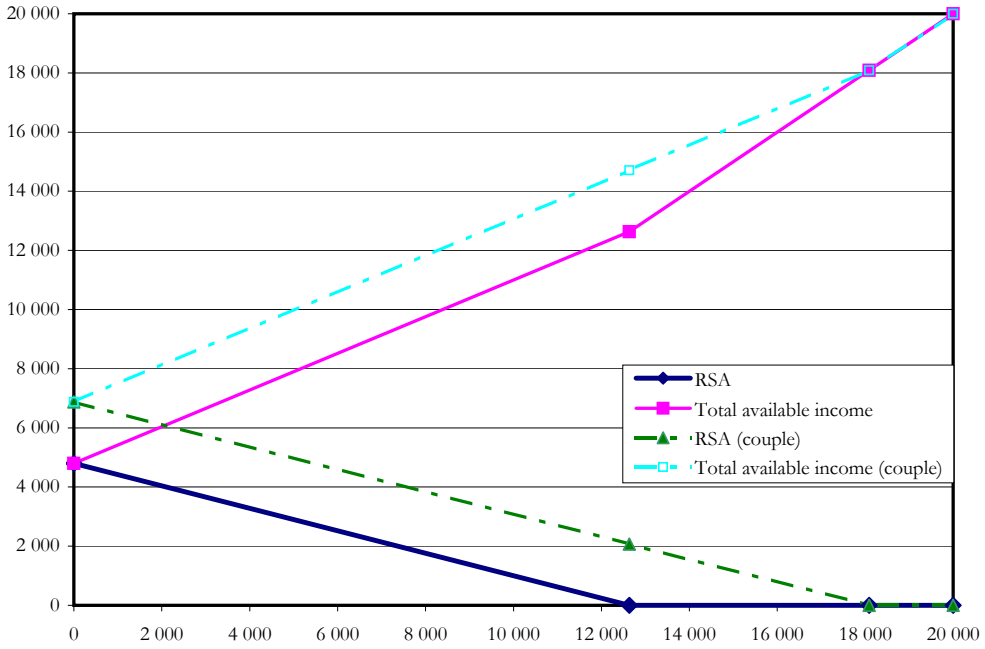

Figure 7: RSA benefits for individuals and couples as a function of labor income.

Note: each additional child shifts this curve up by an amount comprised between 136 and 181 €, depending on the total number of children that the family has, as described in table 17. Single parents have higher benefits than what is shown above.

10 Bn €) : this is not surprising, since there are many other benefits that we did not simulate here, which account for a large amount of unobserved income at the bottom of the distribution, and that are deducted from RSA benefits at a 100% rate.

The previous minimum guaranteed income used to cost 6,18 Bn, and other unobserved allocations, like API (for isolated parents, 1,07 Bn), AAH (for disabled adults, 5,50 Bn), PIRE (for people reentering the labor market, 0,5 Bn) account for a part of the 10 Bn € difference between our projections and government aggregates. The remainder of the difference (2,8 Bn) is probably due to other unobserved income, like the income of people who do not file an income declaration.

The consequence of this gap in our simulation is probably not too important in terms of redistribution, because it mostly corresponds to benefits, which simply are given through other devices than RSA. However, in terms of marginal retention rates, this probably leads to an overestimation of the proportion of people who face a 38% marginal rate of taxation at the bottom of the distribution. (for example, AAH benefits still result in higher implicit marginal tax rates (that vary with the level of labor income).

One effect of the new RSA formula (as compared to the old Minimum Guaranteed Income formula) is to strongly increase the number of households that become eligible to benefits. Indeed, in the previous system, eligible people needed to have an increase less than $\bar{Y}$, whereas with RSA, households between $\bar{Y}$ and $\bar{Y}/0,38$ are also eligible to a portion of RSA benefits.

Households that were eligible to the previous system are called "base" (*socle*), and the others, that have become eligible because of the new formula, are called "hat"(*chapeau*) beneficiaries. Table 20 shows the decomposition of spendings between these categories.

Our computation of “hat” RSA is comparable to government previsions (4,3 Bn vs 3,3 according to the Senate). It is our our computation of “base” RSA that is much too high (more than twice as high) which comforts the hypothesis that missing revenues are indeed social minima.

Since we work on raw tax declarations, another part of the explanation is the fact that people whose situation change (when they marry or divorce, for instance) are required to file several income tax declarations for the same year. Hence, we can see some of them as two

QTIL	P_f	gross labor income	average RSA benefit	total RSA spendings
		29 994	**557**	**19,78 Bn**
0-10	0	1 442	3 427	12,17 Bn
10-20	5 428	8 866	1 219	4,33 Bn
20-30	11 693	13 972	464	1,65 Bn
30-40	16 069	17 847	234	0,83 Bn
40-50	19 474	21 168	171	0,61 Bn
50-60	22 984	25 076	54	0,19 Bn
60-70	27 373	30 306	0	0,00 Bn
70-80	33 639	37 997	0	0,00 Bn
80-90	43 002	50 100	0	0,00 Bn
90-95	59 090	66 689	0	0,00 Bn
95-99	76 863	95 842	0	0,00 Bn
99-99.9	135 141	179 090	0	0,00 Bn
99.9+	309 114	535 518	0	0,00 Bn

Table 19: RSA simulation results: average and total RSA given to households, for each fractile

All households are included in these computations, but only people over 25 are eligible.

	Number of households	Total spendings
Households with 0 labor income	1,35 M	7,47 Bn
"Base" (except 0-income households)	2,02 M	7,98 Bn
"Hat"	3,40 M	4,32 Bn
All beneficiaries	6,65 M	19,77 Bn

Table 20: RSA simulation results: number of households and corresponding spendings

distinct fiscal households who are both eligible to RSA, when we are indeed dealing with a person whose overall yearly income does make her eligible. This is a potentially strong source of RSA overestimation, and, perhaps more than the ones named above, of biases. Fixing this problem could be an important improvement of the simulatorin the future.

In the end, our reproduction of RSA is not perfect, but it seems sufficient for our purpose.

4.5 Family and Children benefits

As the previous sections have shown, many French taxation or redistribution devices deal with family (the presence of a spouse or of children), in one way or another. However, there also exist specific transfers directly aimed at families, that common language regroups under the expression of "family allocations" (*allocations familiales*).

These family benefits include two main components:

- "family allocations" (*allocations familiales*), which only depend on the number and the age of children, and not at all on the number of income.
- "family complement" (*complément familial*), only available to families below a certain level of income and with three children or more.

These transfers are computed and paid by a specialized government organism, called CAF (*Caisse des Allocations Familiales*[20]).

4.5.1 Family Allocations (*allocations familiales*)

Family allocations consist in a base benefit that depends on the number of children (described in table 21), and of an increase[21] (*majoration*) that depends on their age and their year of birth[22].

Number of children (under 20)	Monthly base benefit
1	0,00 €
2	123,92 €
3	282,70 €
Additional child	+158,78 €

Table 21: Family allocations before increases, as of January 1st, 2009

Base benefit

[20] www.caf.fr

[21] In order to provide up-to-date information, we give 2009 schedules. The parameters have been converted back to 2008 value in the simulator. The government had increased them by 3% between 2008 and 2009.

[22] These are not synonyms; see the paragraph about increases(*majorations*).

Increases (*majorations*) For families with two children or more, the following increases apply:

- For Children born before may 1st, 1997 :
  - +34,86€ for every child between 11 and 16.
  - +61,96€ for every child between 16 and 20.
- For children born after this date, there is a single increase of 34,86€ for children over 14.[23]

Note that in the case of family with two children only, no increase is granted on behalf of the oldest child.

4.5.2 Family complement (*complément familial*)

The Family complement is a lump sum transfer, given to families with three children or more, under certain conditions on household income. As of 2009, the amount of the family complement is 161,29€. Conditions on income are described in table 22. If the family's income is higher than the limit of eligibility by less than 1869,84 €, a part of the complement is still granted[24].

Number of children	Couples with only one worker	single parents or two active parents
3	34 489 €	42 191 €
4	40 237 €	47 939 €
additional child	+5 748 €	+5 748 €

Table 22: Maximum family income that triggers eligibility to the Family Complement, as of 2009

4.5.3 Aggregates

In 2007, the CAF spent a total 12,3 Bn € on behalf of Family Allocations, and 1,6 Bn € on behalf of the Family Complement. There are other specific direct transfers[25] in provided

[23] This change implies that children of age 11 in 2009 bring a 36,86€ increase if they were born during the first semester, and nothing if they were born in the second semester. Since we do not observe children's day and month of birth in the data, we randomly attribute this amount to half of the families concerned.

[24] Otherwise stated, the original amount of 161,29€ is decreased by 8,6€ if the family earns 100€ more than the upper limit, and so on.

[25] These other specific direct transfers have not yet been implemented in the simulator.

to families with children, the two most important of which being the *allocation de rentrée scolaire*, given to families at the beginning of academic years on behalf of school expenses, and the *allocation de soutien familial*, given to single parents and adopters. These other transfers represent a total of 5 Bn €.

4.6 The timing of tax and benefit calculation and payment

	T_Y	T_R
Income Tax	2008	2009
CSG/CRDS	2008	2008 (deducted from monthly wages)
PPE	2008	2009 (advance in 2008 for people exiting unemployment)
RSA	2008	2008 (on the previous quarter)
Family Benefits	2008	2008*

Table 23: Timing of tax and benefits calculation and payments

T_Y is the year of revenue on which the tax is levied or the benefit computed. T_T is the year on which the tax or benefit is actually paid.
* As explained in section 4.5, most of children benefits do not depend on income, but solely on the number of children.

5 Reproducing the existing system: economic features

5.1 Average contribution rates and redistributive features

Now that we have described devices one by one and seen their somewhat ambiguous effects (for example as regards the treatment of children), this section presents the overall economic features they provide when put together.

We first present a few simple cases, in which we draw and decompose the "tax curve" that results from compounding all studied devices, both for singles and for couples. We then study average contribution rates, both at the household level and at the individual level. We finally study marginal tax rates, both at the household level and at the individual level. What

we call “tax rates” are both implicit and explicit tax rates, whether they are actual paid taxes or losses in benefits. These are equivalent in terms of their effect on labor supply decision.

Household level analysis is quite straightforward, but analysis at the individual level requires a few hypotheses about the repartition of taxes and transfers among household members. This repartition is likely differ whether we are considering average tax rates or terms of marginal tax rates, when one household member decides to change her labor market participation. These hypotheses are presented below.

5.1.1 Tax and Benefit curves in simple cases

Figures 8 and 9 represent the average tax rates faced by singles and couples without children in the simplest case, which is people over 25 and not retired, not disabled, not unemployed, and that do not have any children-related or special tax exemption or transfer of any kind. It is also assumed that they do not have any capital income. The curves describe implicit tax rates faced by such (full-time) workers, as a function of gross labor income.

Our overall tax rates compound:

- Income Tax
- CSG & CRDS
- PPE Benefits
- RSA Benefits
- Family Allocations and Family complements

However, social security contributions are not included in this overall tax rate. Indeed, they are not actual taxes, in the sense that the benefits they give right to are proportional to contributions.

Most of the kinks in the bottom of the overall tax curve are due to the PPE schedule and its eligibility boundaries. At the top, kinks are due to the variation of the ratio between gross labor income and taxable income that happens when the "social security ceiling is reached" (around 32 000 € a year for a single worker). As gross labor income tends to infinity, the current overall tax rate (for singles or couples without children) tends to 40,8%, that can be

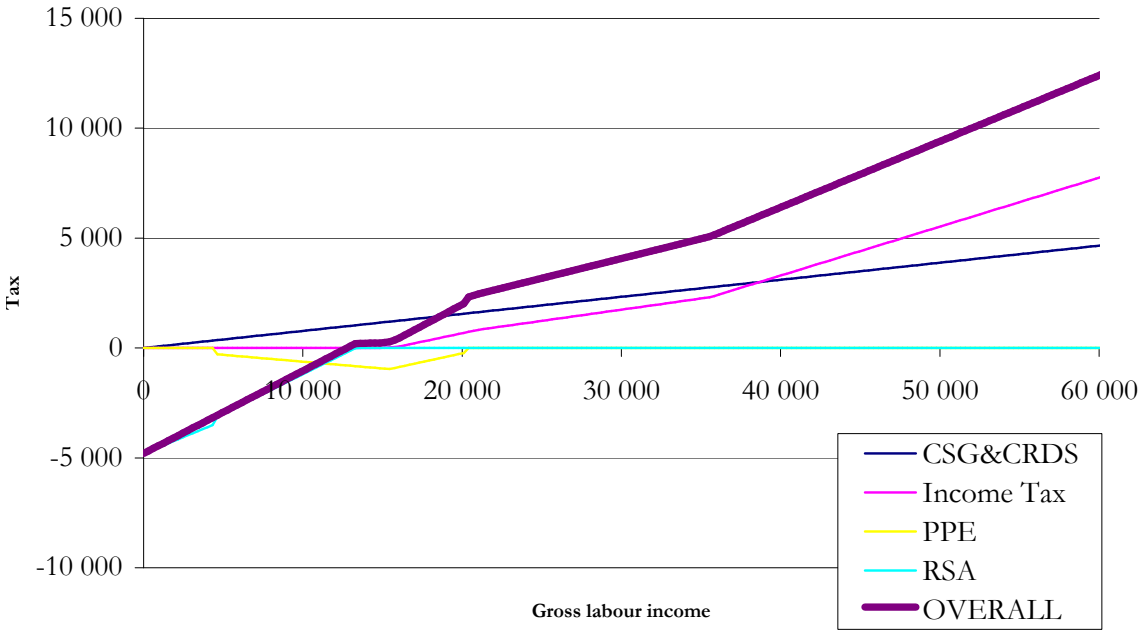

Figure 8: [Singles]Implicit and explicit taxes as a function of gross labor income.

These curves are computed for single people (men or women), with no children, and whose income is 100% salary. For PPE computation, these people are assumed to work full time.

decomposed as follows: 33% of income tax and 7,8% of RSA. PPE and RSA benefits are of course of 0%. The limit rate of current income tax rate, as income tends to infinity, is 33% and not 40%, because we express everything in terms of gross income, and not in terms of taxable income. See section 4.1 for more details about this issue.

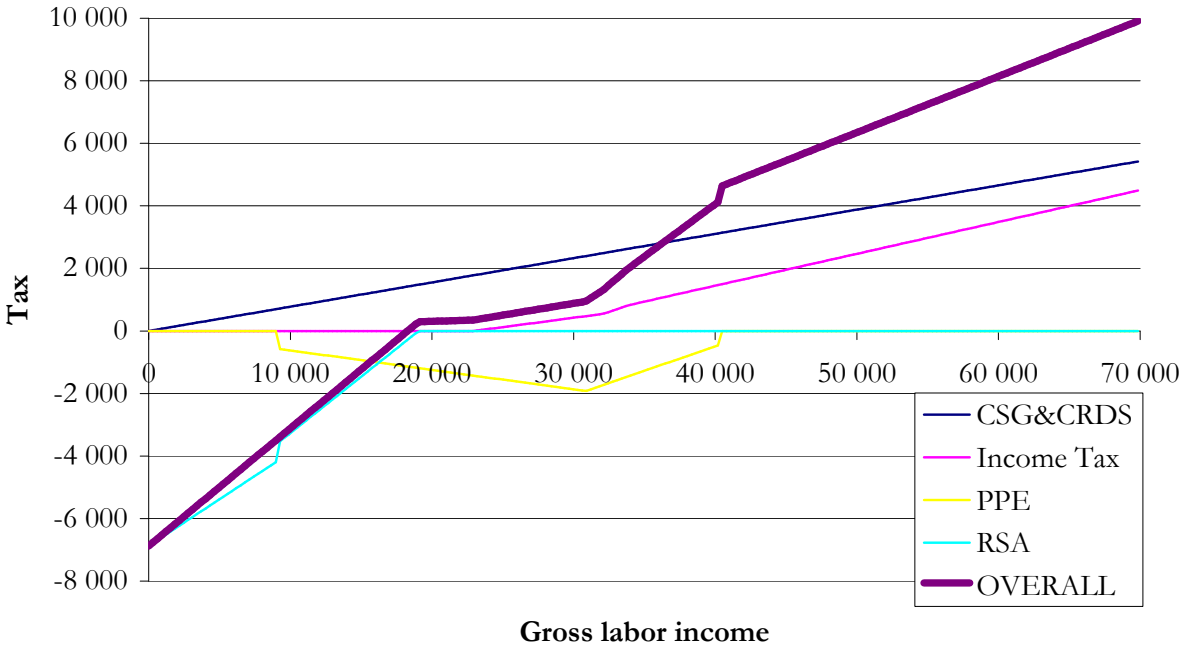

Figure 9: Implicit and explicit taxes as a function of gross labor income.

These curves are computed for couples with no children, and whose income is 100% salary. For PPE computation, these people are assumed to work full time.

The same curves, but expressed in terms of tax rates rather than tax amounts, can be found in page 115 and 116 of the appendix.

5.1.2 Actual contribution rates of households

Table 24 shows average contribution rates on a household basis. The average contribution rate is computed as follows:

$$\text{Overall Tax} = \text{Income Tax} + \text{CSG} + \text{CRDS} - \text{PPE} - \text{RSA} - \text{FA} - -\text{FC}$$

$$\frac{\text{Overall Tax}}{\max(Y_L, Y_L - \text{Overall Tax})}$$

Where Y_L is gross labor income.

This formula is equivalent to a simple tax/income ratio when the overall contribution rate is positive. When the contribution rates is negative, it measures the part of available income that comes from negative taxation (i.e. transfers). This has the advantage of making more sense for very small incomes, and of being properly defined (and equal to 100%) when $Y_L = 0$.

A more graphical illustration of average contribution rates ranked by fractile of households is provided in figure 10.

fractile	P_f	gross labor income	income tax	CSG& CRDS	PPE& RSA	FA& FQ	Available income	contribution rate
All		**33 977**	**1 953**	**2 637**	**1 031**	**701**	**24 028**	**8,4%**
0-10	0	1 157	0	90	4 946	680	6 432	-86,1%
10-20	5 428	8 736	0	678	2 881	523	9 578	-28,5%
20-30	11 693	14 007	5	1 087	1 585	511	11 996	-7,2%
30-40	16 069	17 886	150	1 388	942	478	13 922	0,7%
40-50	19 474	21 216	360	1 646	419	520	15 587	5,0%
50-60	22 984	25 115	597	1 949	172	560	17 902	7,2%
60-70	27 373	30 330	919	2 354	138	614	21 291	8,3%
70-80	33 639	38 054	1 362	2 953	148	756	26 497	9,0%
80-90	43 002	50 189	2 249	3 895	0	887	34 245	10,5%
90-95	59 090	66 748	3 882	5 180	0	1 010	44 588	12,1%
95-99	76 863	96 078	8 576	7 456	0	1 148	61 319	15,5%
99-99.9	135 141	179 127	29 418	13 900	0	1 553	104 949	23,3%
99.9+	309 114	527 434	151 023	40 929	0	1 705	266 409	36,1%

Table 24: Average contribution rates, all devices compounded, by household

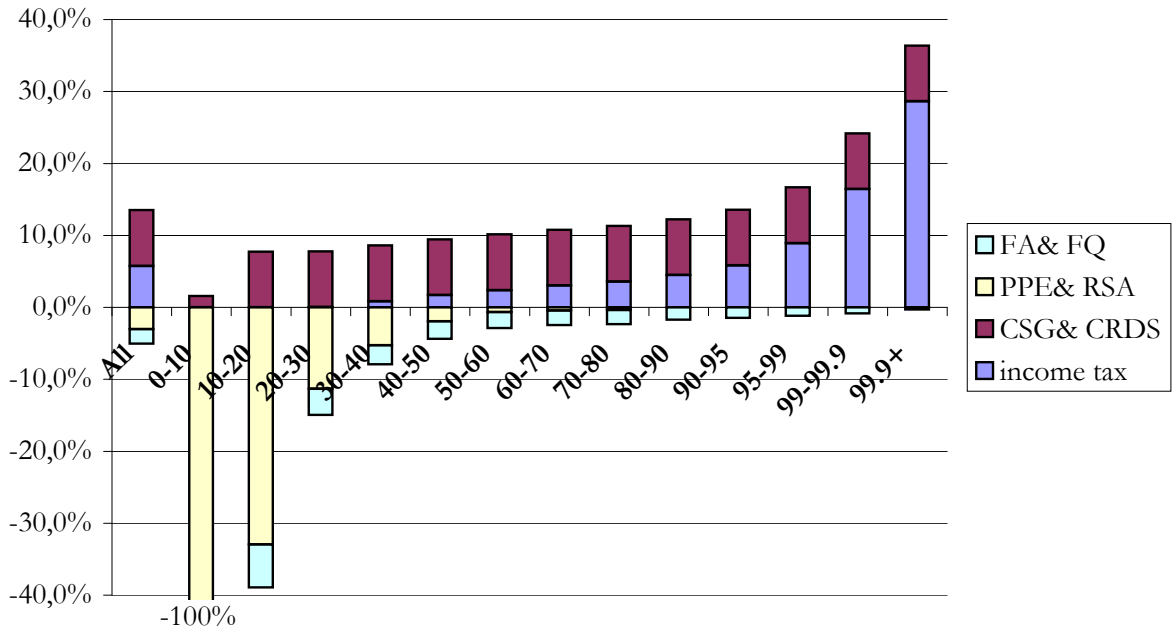

Figure 10: Average contribution rates, all devices compounded, by household.

5.2 Assumptions about intra-household attribution of taxes and benefits:

In order to describe the features of the existing system at the individual level, we need to make assumptions as regards the way taxes and benefits are split within couples. We assume the following:

- Family Allocations and Family Quotient are split in two.
- CSG and CRDS are paid directly by the worker. We assume it is directly deducted from wage, and never enters intra household bargaining after that.
- As regards the other devices (PPE, RSA, Income Tax), there are two cases:
  - if the tax rate resulting from compounding these three devices is positive, then the tax amount is split between spouses proportionally to their income level. He who earns an α proportion of household total labour income pays a proportion α of taxes.
  - if the tax rate resulting from compounding these devices is negative (the household is beneficiary of the system), then benefits are simply split in two between

spouses.

In terms of marginal rates however, we make the hypothesis that for amounts that are split between spouses (that is all except CSG, CRDS, FA and FQ), each spouse faces the household's marginal tax rate. Otherwise stated, we assume that if a spouse makes the choice to modify her labor supply and hence her income, she has to compensate her partner for 100% of the tax variation caused by this decision.

In the following tables, we present PPE and RSA in an aggregated variable, "PPE&RSA". This seems to make more sense, since RSA complements PPE benefits.

5.2.1 Reconstructed contribution rates of individuals

Table 25 shows average contributions rates on an individual basis, both for men and women. In this table, fractiles are first constructed without any gender distinction, so only men and women that belong to the same fractile of global population find themselves on the same line.

On the contrary, table 26 describes the contribution rates of women ranked by fractiles of women, and of men ranked by fractiles of men.

Fractile	P_f	gross labor income	income tax	CSG& CRDS	PPE&RSA	alloc	contribution rate
Men&Women							
All		**25 879**	**1 573**	**1 953**	**294**	**614**	**10,1%**
0-20	0	950	11	69	857	771	-62,0%
20-30	6 173	9 950	145	729	555	607	-2,8%
30-40	13 240	15 850	306	1 163	348	558	3,5%
40-50	18 206	20 083	445	1 490	185	553	6,0%
50-60	21 859	23 698	614	1 770	87	552	7,4%
60-70	25 577	27 709	887	2 075	35	530	8,6%
70-80	30 033	32 999	1 303	2 485	11	546	9,8%
80-90	36 422	41 661	2 100	3 155	1	567	11,2%
90-95	48 925	56 208	3 760	4 285	0	609	13,2%
95-99	66 428	87 230	8 593	6 701	0	733	16,7%
99-99.9	128 562	178 169	31 701	13 784	0	872	25,0%
99.9+	328 097	589 010	173 382	45 670	0	945	37,0%
Men							
All		**34 747**	**2 201**	**2 608**	**296**	**615**	**11,2%**
0-20	0	1 379	5	100	1 806	697	-63,5%
20-30	6 173	10 017	54	706	967	628	-7,7%
30-40	13 240	15 931	158	1 119	561	597	0,7%
40-50	18 206	20 122	281	1 452	285	602	4,2%
50-60	21 859	23 730	423	1 745	128	605	6,0%
60-70	25 577	27 724	678	2 054	51	566	7,6%
70-80	30 033	33 045	1 054	2 471	16	570	8,9%
80-90	36 422	41 832	1 813	3 150	2	587	10,5%
90-95	48 925	56 381	3 404	4 287	0	617	12,5%
95-99	66 428	87 616	8 195	6 726	0	737	16,2%
99-99.9	128 562	178 619	31 157	13 818	0	882	24,7%
99.9+	328 097	589 035	172 372	45 669	0	965	36,9%
Women							
All		**17 046**	**947**	**1 299**	**292**	**613**	**7,9%**
0-20	0	857	12	63	652	787	-61,4%
20-30	6 173	9 914	194	741	333	596	0,1%
30-40	13 240	15 794	409	1 193	199	532	5,5%
40-50	18 206	20 042	619	1 530	80	502	7,8%
50-60	21 859	23 652	883	1 806	29	476	9,2%
60-70	25 577	27 684	1 226	2 108	9	473	10,3%
70-80	30 033	32 916	1 750	2 509	4	503	11,4%
80-90	36 422	41 267	2 766	3 167	0	523	13,1%
90-95	48 925	55 608	4 988	4 277	0	584	15,6%
95-99	66 428	85 195	10 693	6 571	0	708	19,4%
99-99.9	128 562	174 508	36 122	13 508	0	792	28,0%
99.9+	328 097	588 755	183 633	45 679	0	741	38,8%

Table 25: Average contribution rates of individuals. Fractiles of general population.

Men Fractile	P_f	gross labor income	income tax	CSG& CRDS	PPE& RSA	alloc	contribution rate
All		**30 243**	**1 894**	**2 315**	**617**	**454**	**10,4%**
0-10	0	1 240	2	89	3 373	381	-78,4%
10-20	5 767	10 004	24	744	1 645	368	-12,4%
20-30	13 779	16 478	142	1 240	708	400	1,7%
30-40	18 679	20 300	359	1 545	289	435	5,8%
40-50	21 845	23 352	528	1 779	92	459	7,5%
50-60	24 851	26 470	754	2 015	42	431	8,7%
60-70	28 226	30 374	1 049	2 316	19	450	9,5%
70-80	32 769	35 894	1 519	2 748	5	479	10,5%
80-90	39 638	45 520	2 600	3 495	0	493	12,3%
90-95	53 641	61 784	4 755	4 765	0	562	14,5%
95-99	72 908	95 027	10 674	7 348	0	691	18,2%
99-99.9	139 734	193 594	37 292	15 004	0	841	26,6%
99.9+	356 388	645 895	196 579	50 109	0	899	38,1%

Women Fractile	P_f	gross labor income	income tax	CSG& CRDS	PPE& RSA	alloc	contribution rate
All		**18 665**	**922**	**1 411**	**871**	**545**	**4,9%**
0-20	0	124	2	9	2 129	855	-96,7%
20-30	1 814	5 209	42	372	2 038	635	-34,8%
30-40	8 326	10 910	124	806	1 162	531	-7,0%
40-50	13 325	15 433	222	1 157	679	451	1,6%
50-60	17 391	19 045	391	1 445	405	409	5,4%
60-70	20 670	22 421	622	1 701	141	401	7,9%
70-80	24 366	26 634	982	2 015	28	402	9,6%
80-90	29 181	32 725	1 576	2 478	2	413	11,1%
90-95	37 179	40 770	2 556	3 096	0	459	12,7%
95-99	45 794	55 276	4 922	4 201	0	513	15,6%
99-99.9	75 448	98 105	14 338	7 501	0	668	21,6%
99.9+	161 017	269 689	71 544	20 878	0	750	34,0%

Table 26: Average contribution rates of individuals. Same-gender fractiles.

5.3 Marginal retention and taxation rates

5.3.1 Methodology

The computation of marginal retention and taxation rates is done as follows: for each household, we suppose that yearly gross labor income increases by 100€. We convert this amount into taxable and net income. In order to do this, we use the marginal ratios described in section 4.1. Marginal ratios are the factor of the last term of the expression of average ratios described in table 7.

For example, for a worker earning 1 000€, an increase in 100€ in gross labor income (useful to compute CSG and CRDS) translates into an increase in 83,7€ in taxable income (useful to compute Income Tax and PPE), which itself translates to an increase in 78,8€ in net income (useful to compute RSA benefits). For a worker earning 10 000€ a month, an additional 100€ in gross labor income means a 91€ increase in taxable income and a 89€ increase in net income.

We then sum up the excesses or deficits in available income produced by the effect this 100€ increase in income on all studied devices in order to obtain marginal tax rates. Marginal retention rates are simply the difference between 1 and marginal tax rates.

This process is straightforward for all devices except for PPE, because it is computed on individual income and not on household income. In the case of PPE for couples, we assume that the 100€ increase in gross labor income is equally distributed among spouses. Indeed, even if PPE is computed individually, it is paid as a tax reduction to the whole household, so there is reason to assume that PPE benefits are not treated differently, during the intra-household bargaining about the repartition of the tax burden among spouses, than other taxes or benefits. Hence, in the case of PPE, we stick to our beginning hypothesis: each spouse faces their household's marginal rate of taxation. This 50/50 division in order to compute PPE implicit marginal tax rate is the measure that is relevant to labor supply decisions given this hypothesis on intra-household bargaining.

5.3.2 Actual marginal tax rates faced by households

Fractile	P_f	marginal income tax rate	marginal CSG rate	Marginal RSA rate	overall marginal rate
		12,8%	**7,8%**	**4,8%**	**25,4%**
0-10	0	0,0%	7,8%	28,4%	36,1%
10-20	5 428	0,0%	7,8%	27,9%	35,7%
20-30	11 693	1,2%	7,8%	21,2%	30,2%
30-40	16 069	7,4%	7,8%	17,9%	33,0%
40-50	19 474	7,1%	7,8%	12,1%	26,9%
50-60	22 984	7,9%	7,8%	6,4%	22,1%
60-70	27 373	8,0%	7,8%	7,8%	23,6%
70-80	33 639	10,6%	7,8%	7,2%	25,5%
80-90	43 002	11,3%	7,8%	0,0%	19,0%
90-95	59 090	12,5%	7,8%	0,0%	20,3%
95-99	76 863	19,7%	7,8%	0,0%	27,4%
99-99.9	135 141	28,8%	7,8%	0,0%	36,5%
99.9+	309 114	32,6%	7,8%	0,0%	40,4%

Table 27: Marginal tax rates in the existing system, by fractiles of households

5.3.3 Translation into marginal rates faced by individuals

Applying the assumptions about intra-household bargaining described in section 5.2, we derive the following tables about marginal rates actually faced by individuals.

Table 28 shows marginal rates faced by individuals in the current system. We can see that in fractile 70-80 and above, marginal rates faced by women are higher than those faced by men. This is typically the effect of Income Tax on second earners. This is also visible in table 29, that computes fractiles separately for men and women: although women's fractiles have much lower boundaries than those of men, they still face comparable marginal tax rates. As illustrated in figure 11, we find a U-shaped curve of marginal tax rates, for households, for men and for women (the convexity being stronger for women). Of course, the devices causing marginal rates to be high are not the same at the top and at the bottom of the income distribution. As shown on this figure, the main "responsible" device for the high implicit marginal tax rates faced by low income households and individuals is RSA, whereas the device causing high marginal rates at the top of the income distribution is standard income

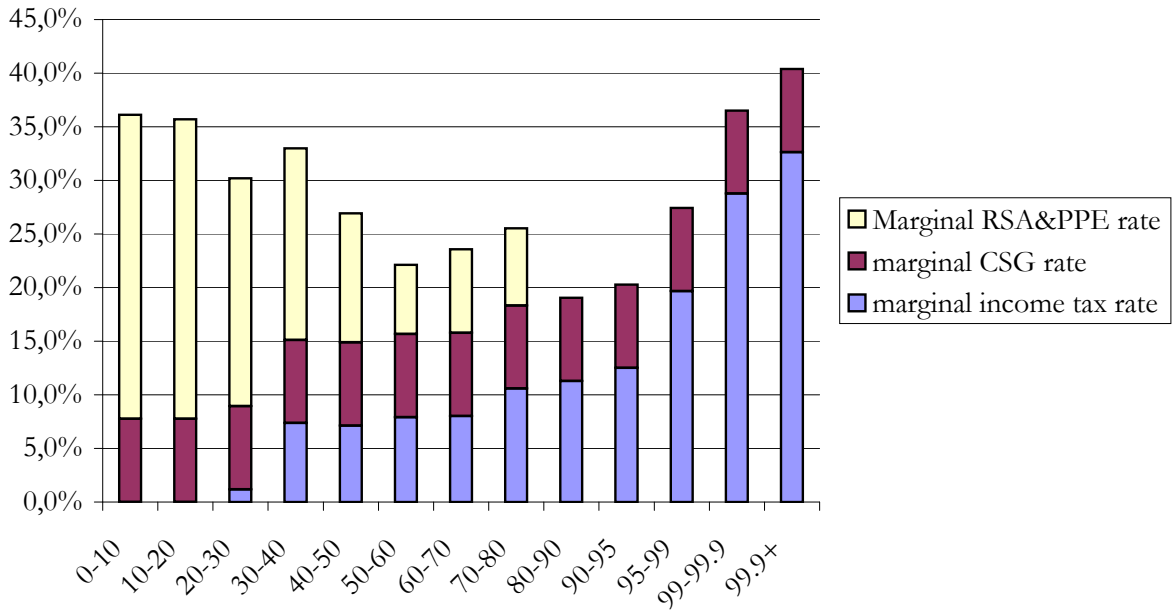

Figure 11: Marginal tax rates in the existing system, by fractiles of households

tax. The smallest marginal rates are faced by households located in the 80-95 fractile. They are twice lower than those present at the extremities of the income distribution (20% vs 35-40%).

Fractile	P_f	marginal income tax rate	marginal CSG rate	Marginal RSA rate	overall marginal rate
		Men&Women			
		12,8%	**7,8%**	**4,8%**	**25,4%**
0-20	0	1,6%	7,8%	27,1%	36,5%
20-30	6 173	2,5%	7,8%	25,1%	35,4%
30-40	13 240	5,9%	7,8%	14,4%	28,1%
40-50	18 206	8,1%	7,8%	12,4%	28,3%
50-60	21 859	7,9%	7,8%	7,5%	23,2%
60-70	25 577	9,2%	7,8%	4,4%	21,3%
70-80	30 033	9,8%	7,8%	1,6%	19,1%
80-90	36 422	12,9%	7,8%	0,2%	20,9%
90-95	48 925	15,8%	7,8%	0,0%	23,5%
95-99	66 428	20,6%	7,8%	0,0%	28,4%
99-99.9	128 562	29,4%	7,8%	0,0%	37,2%
99.9+	328 097	32,6%	7,8%	0,0%	40,3%
		Men			
		13,4%	**7,8%**	**4,6%**	**25,8%**
0-20	0	0,4%	7,8%	25,7%	33,9%
20-30	6 173	1,0%	7,8%	23,1%	31,8%
30-40	13 240	5,4%	7,8%	17,0%	30,1%
40-50	18 206	7,8%	7,8%	16,6%	32,2%
50-60	21 859	7,3%	7,8%	10,3%	25,3%
60-70	25 577	8,5%	7,8%	6,6%	22,8%
70-80	30 033	9,0%	7,8%	2,7%	19,5%
80-90	36 422	12,0%	7,8%	0,3%	20,1%
90-95	48 925	14,8%	7,8%	0,0%	22,6%
95-99	66 428	19,9%	7,8%	0,0%	27,7%
99-99.9	128 562	29,1%	7,8%	0,0%	36,8%
99.9+	328 097	32,5%	7,8%	0,0%	40,3%
		Women			
		11,8%	**7,8%**	**5,1%**	**24,6%**
0-20	0	2,4%	7,8%	27,9%	38,0%
20-30	6 173	3,5%	7,8%	26,4%	37,7%
30-40	13 240	6,3%	7,8%	12,4%	26,5%
40-50	18 206	8,4%	7,8%	8,2%	24,4%
50-60	21 859	8,7%	7,8%	3,8%	20,3%
60-70	25 577	10,1%	7,8%	1,3%	19,2%
70-80	30 033	10,8%	7,8%	0,0%	18,6%
80-90	36 422	14,4%	7,8%	0,0%	22,2%
90-95	48 925	17,9%	7,8%	0,0%	25,7%
95-99	66 428	23,2%	7,8%	0,0%	31,0%
99-99.9	128 562	31,6%	7,8%	0,0%	39,4%
99.9+	328 097	32,9%	7,8%	0,0%	40,6%

Table 28: Marginal tax rates of the existing system, by fractiles of general population between 25 and 65

Fractile	P_f	marginal income tax rate	marginal CSG rate	Marginal RSA rate	overall marginal rate
		Men			
All		**13,4%**	**7,8%**	**4,6%**	**25,8%**
0-10	0	0,4%	7,8%	25,7%	33,9%
10-20	5 767	0,9%	7,8%	23,1%	31,8%
20-30	13 779	5,9%	7,8%	17,4%	31,0%
30-40	18 679	7,7%	7,8%	15,5%	31,0%
40-50	21 845	7,4%	7,8%	9,6%	24,8%
50-60	24 851	8,5%	7,8%	6,9%	23,1%
60-70	28 226	8,8%	7,8%	3,1%	19,7%
70-80	32 769	10,9%	7,8%	0,8%	19,5%
80-90	39 638	13,6%	7,8%	0,0%	21,4%
90-95	53 641	16,7%	7,8%	0,0%	24,5%
95-99	72 908	22,7%	7,8%	0,0%	30,4%
99-99.9	139 734	30,9%	7,8%	0,0%	38,6%
99.9+	356 388	32,7%	7,8%	0,0%	40,5%
		Women			
All		**11,8%**	**7,8%**	**5,1%**	**24,6%**
0-20	0	2,3%	7,8%	22,5%	32,6%
20-30	1 814	2,5%	7,8%	27,9%	38,2%
30-40	8 326	3,6%	7,8%	26,9%	38,3%
40-50	13 325	5,9%	7,8%	13,2%	26,9%
50-60	17 391	8,2%	7,8%	9,1%	25,0%
60-70	20 670	8,6%	7,8%	4,2%	20,6%
70-80	24 366	10,1%	7,8%	1,2%	19,1%
80-90	29 181	11,6%	7,8%	0,0%	19,4%
90-95	37 179	15,1%	7,8%	0,0%	22,9%
95-99	45 794	19,0%	7,8%	0,0%	26,8%
99-99.9	75 448	26,9%	7,8%	0,0%	34,7%
99.9+	161 017	32,8%	7,8%	0,0%	40,5%

Table 29: Marginal tax rates of the existing system, by same-gender fractiles

5.4 The effect of children

Children-related gains are central to the French system, and very important quantitatively. However, the way they should be implemented in an individual system does not seem obvious. Hence, our goal here is to describe the existing children-related gains of all devices (put together) as precisely as possible and to simulate a simple reform, in which the existing children-related gains are replaced by a yearly lump-sum transfer of 1 780 € per child per family, to be split between spouses. A more refined treatment of this issue could constitute a central improvement of this work. However, it requires a normative reflection that goes beyond the scope of this dissertation.

5.4.1 Children-related gains : synthesis of the features of each device

Table 30 briefly summarizes the treatment of children in each of the existing devices. For more detail, see the previous section. Different logics that are put side by side: some devices yield children-related gains that are increasing in the level of income, some yield constant benefits, and some yield decreasing benefits with respect to income. Hence, it is worth seeing what happens when all devices are put together, and what shape children benefits actually have, as a function of income and number of children. As shown in figure 12, the dominant effect seems to be an increase of children-related benefit with respect to income. This is due to both an increase in the per-child gains with respect to income, and an increase in the average number of children with respect to income.

In the next two subsections, we propose two ways to measure the effect of children on taxes and benefits. The first way is to compute a contrafactual amount, for each device and for each household, that would be received by the household if it had no children. This gives an idea of distributional effects of existing children-related policies. The second way is to give one additional child to all couples that already have one, and see how they end-of the year income would be affected. This is more interesting in order to study incentives to have children provided by the existing system. One might want to keep them unchanged in individualization scenarios.

	per-child gain	
	income	total number of children
Income Tax	↗	↗
Family Allocations	no effect	↗
Family Complement	↘	↗
RSA	↘	↗
CSG	no effect	no effect
PPE	↘	no effect

Table 30: Effect of income and number of children on the *per-child* gain brought by the different devices

These are the ceteris paribus effects; as we will show below, more ambiguous effects emerge when all devices are put together.

5.4.2 Average contribution rates with and without children

In this subsection, we study the difference between retention rates of every household and their contrafactual retention rate if they had no children. For those wanting to use the simulator, all these contrafactual variables are indicated by the suffix `_SE`. On average, having one child yields a tax or benefits advantage of 1780€ per year. However, there are strong differences in the per child gain of households, for two main reasons:

- income has an effect on children benefits
- the third and fourth child trigger stronger benefits or tax reductions that the first and the second one. Since the average number of children is higher at the top of the income distribution, this yields an even higher inequality.

Table 31 (illustrated by figure 12) shows this phenomenon. It shows that per-child gains in the current system are U-shaped, but globally increasing.

fractiles of households	P_f	mean gross income	number of children	rsa w/o children	rsa gain with children
All		**29 994**	**0,5**	**418**	**+157**
0-10	0	1 442	0,5	2 884	+548
10-20	5 428	8 866	0,3	961	+344
20-30	11 693	13 972	0,3	261	+277
30-40	16 069	17 847	0,3	59	+183
40-50	19 474	21 168	0,4	14	+161
50-60	22 984	25 076	0,4	0	+58
60-70	27 373	30 306	0,5	0	+1
70-80	33 639	37 997	0,6	0	+0
80-90	43 002	50 100	0,8	0	+0
90-95	59 090	66 689	0,9	0	+0
95-99	76 863	95 842	1,1	0	+0
99-99.9	135 141	179 090	1,4	0	+0
99.9+	309 114	535 518	1,5	0	+0

	income tax w/o children	income tax gain with children	FA&FQ	Overall children-related gains	(per child)
All	**1 861**	**-304**	**438**	**+899**	**+1779**
0-10	0	-0	479	+1027	+2150
10-20	0	-0	260	+604	+2112
20-30	5	-1	233	+511	+1883
30-40	167	-35	240	+458	+1585
40-50	438	-104	298	+563	+1527
50-60	726	-155	352	+564	+1317
60-70	1 084	-191	398	+589	+1242
70-80	1 740	-337	521	+858	+1396
80-90	2 971	-602	666	+1268	+1593
90-95	4 926	-837	805	+1641	+1745
95-99	11 030	-2082	973	+3055	+2802
99-99.9	33 534	-3602	1 386	+4988	+3588
99.9+	158 825	-3898	1 510	+5408	+3706

Table 31: Children-related benefits provided by each device, by fractile of households

The measure adopted here is the difference between the actual benefits received by households and the contrafactual benefits they would receive if they had no children

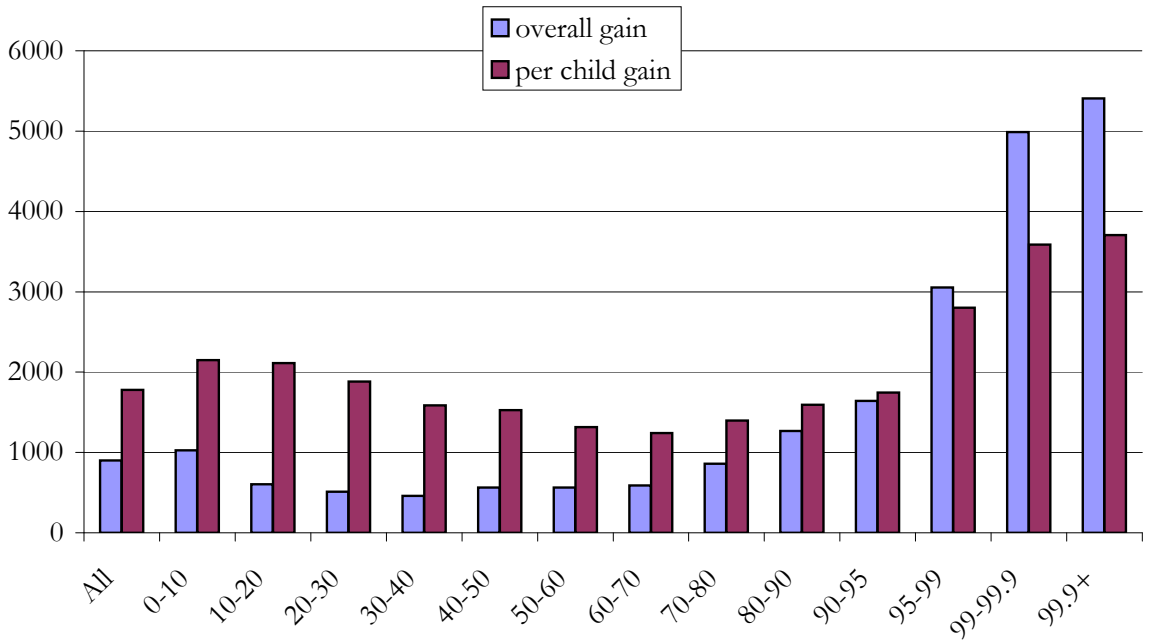

Figure 12: Overall children benefits by fractile of households

5.4.3 Effect of an additional child on available income

In this section, we assume that all households with one child have an additional child. This gives insights about incentives to have additional children, but does not give a clear view of redistributive effects, because an additional child brings as much or more than the first one.

	Income Tax Gain	FA+FC	RSA Gain
ALL	**482**	**1 938**	**-10**
0-10	0	1 931	17
10-20	0	1 919	-30
20-30	0	1 944	-65
30-40	1	1 932	-84
40-50	31	1 937	-62
50-60	104	1 962	25
60-70	226	1 974	10
70-80	344	2 015	0
80-90	579	2 033	0
90-95	953	1 846	0
95-99	1 752	1 787	0
99-99.9	3 634	1 630	0
99.9+	3 755	1 563	0

Table 32: Average fiscal and benefit gains from having one additional child among households that already have one child (10,1 Mn households)

As expected, the fiscal gain from having one additional child is strongly increasing with revenue: It is less than 100€ for households below median income, and reaches more than 3 500€ for the last centile. The reason it does not become higher is the ceiling described in section 4.2.2, which is at most 4 600€ per child.

Family Allocation gains are flat over the distribution, but family complement gains are not (because of their conditioning on household income), which explains why the curve FA+FC is decreasing with respect to income.

The effect of one additional child on RSA is ambiguous, but it is generally very weak when compared to the two others (it affects available income by at most 84€ in one fractile). The reason why this amount can be positive or negative is the variability in the number of children across deciles and its effect on the interaction between RSAn Family Allocations,

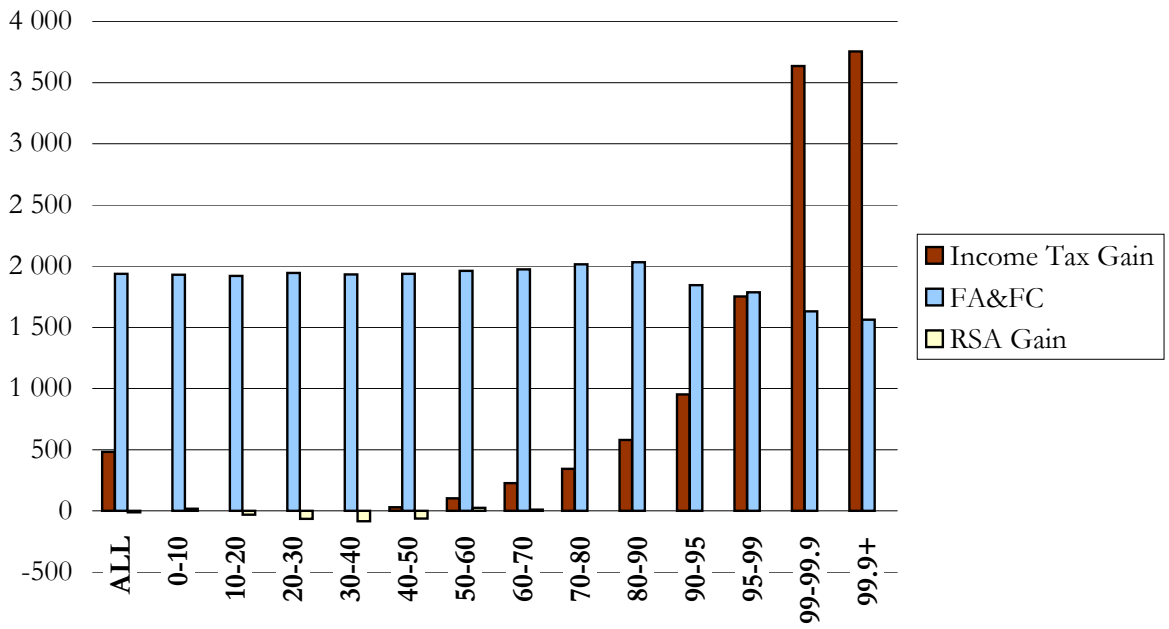

Figure 13: Average fiscal and benefit gains from having one additional child among households that already have one child (10,1 M households)

and Housing Deduction (*forfait logement*): indeed, if the additional child is a second child, she will trigger eligibility to Family Allocations, that will be deducted from RSA (whose level will also increase, but less). For example, a second child triggers a 120€ monthly Family Allocations Benefits, and RSA is increased by 136€ but the housing deduction is also increased by 55€. The result is a 39€ loss in benefits.

Note that the effect of an additional child on RSA is much stronger for households that, even with this additional child, remain ineligible to FA and FC: for example, couple who have their first child. Then, no FA and FC is given to them, but their RSA guaranteed income is raised by 136€.

5.4.4 Redistributive effects of a lump-sum children benefits reform

As can be seen above, the question of how children should be treated is complex. Children-related gains can not be left as they currently are it is in any individualization scenario, but there are many possibilities as regards how it should be replaced.

In our scenarios below, we replace the existing children-related fractures of all devices by

fractile	P_f	gross labor income	current children benefits	flat-rate benefits	households winners	losers
All		**29 994**	**899**	**899**	**89%**	**11%**
0-10	0	1 442	1 027	850	82%	18%
10-20	5 428	8 866	604	509	89%	11%
20-30	11 693	13 972	511	483	91%	9%
30-40	16 069	17 847	458	514	94%	6%
40-50	19 474	21 168	563	656	95%	5%
50-60	22 984	25 076	564	762	97%	3%
60-70	27 373	30 306	589	844	97%	3%
70-80	33 639	37 997	858	1 094	95%	5%
80-90	43 002	50 100	1 268	1 415	88%	12%
90-95	59 090	66 689	1 641	1 673	84%	16%
95-99	76 863	95 842	3 055	1 940	47%	53%
99-99.9	135 141	179 090	4 988	2 473	33%	67%
99.9+	309 114	535 518	5 408	2 596	32%	68%

Table 33: Redistributive effects of a flat-rate reform of children benefits (including all indirect benefits given to families with children through income tax and rsa)

As can be seen, such a reform would make few losers, but very concentrated at the top of income distribution. For the number of households in each fractile, see the previous table.

a lump-sum transfer that only depends on the number of children, and no longer of the level of income. We simply give an amount of 1780 € per year and per child to every household, and split in two in the case of couples. This amount is chosen because it is the average per-child gain in the current system, which makes the reform neutral from the point of view of budget balance. The distributional effects of such a reform are described in table 33. This amount is split in two in the case of a couple.

6 Individualization scenarios

6.1 Properties and constraints of simulated reforms

In the following section, we experiment a few experimental scenarios of fundamental reform of the system.

While leaving social security contributions unchanged, we simulate various possible new systems replacing Income Tax, CSG, CRDS, PPE, RSA, and Family Benefits. This subsection describes the properties these systems should yield.

All devices are merged into one simple, easy to understand schedule, which yields efficiency gains and maintains roughly comparable tax revenues. The schedule is expressed as a function of gross labor income, which removes the complicated distinctions between gross income, taxable income and net income. These differences have been taken into account in the simulation of the current system, but they are directly included in the design of our experimental tax schedules, and hence no longer appear.

In order for the new system to be easily understandable, it is expressed in an average rate schedule (as opposed to the marginal rate schedule existing in today's income tax, for example). The main advantage of expressing our schedule in terms of average tax rates is increased legibility: with one look at the table, a taxpayer can see that with her income G, she will be subject to a tax rate $f(G)$, without needing to make any further computation. The downside is that marginal tax rates become implicit, and tend to be more erratic than in marginal-rate schedules. Still, we believe that this increased legibility alone could be the source of efficiency gains.

The system also has to be roughly comparable to today's system in terms of global tax revenue. However, the practice of income splitting (couple income splitting as well as family income splitting) is suppressed, and taxes are paid on an individual basis. The treatment of children is also strongly simplified: every family receives a lump-sum transfer of 1 790€ per child and per year. This amount corresponds to the average gain brought by one kid in the current system. The transfer is split equally between parents. Redistributive effects of such a measure have been studied in section 5.4.

Individual taxation is at the core of the possibility of having efficiency gains, but it comes at a high price if implemented to its full extent: indeed, full individualization means, for example, giving benefits to non working people who have a relatively rich spouse. This illustrates two potentially very strong negative effects:

First, in terms of budget balance, it triggers a dramatic increase in benefit (negative tax) spending;

Second, in terms of efficiency losses, giving out benefits to people who have a relatively rich spouse will in most cases lead to increasing their implicit marginal tax rate[26].

Hence, we also simulate semi-individual systems, where individual treatment is implemented when the tax rate is positive, and familial treatment is kept when the tax rate is negative. Defining a limit and a correct transition between these two systems (individual at the top, familial at the bottom) raises numerous questions, which are dealt with in section 6.5.

With these criteria and properties in mind, we experiment three possible reforms. They differ by their schedule table, and by the level of individualization they implement. Schedule *1-i* has a schedule that reproduces average tax rates faced by singles in the current system, and is implemented in a fully individual way. Schedule *2-i* reproduces the average tax rates faced by couples, and is also implemented in a fully individual way. Schedule *3-i* is an experimental scheme that reproduces the average tax rates faced by couples for most of the income distribution, but yields much higher tax rates for very high income levels (up to 70% at 1 200 000€ a year). Finally, Schedule *3-f* is like schedule 3-i, but is implemented in a semi-

[26]the marginal tax rate of RSA benefits, which we integrate in our new schedule, being higher than the marginal tax rate of income tax, except for very large levels of income

individual way, that is with familial treatment at the bottom of the income distribution. In schedule names, i means fully **i**ndividual, and f means semi-individual (**f**amilial treatment at the bottom of income distribution). We also provide a description of the results of semi-individual versions of reforms 1 and 2. They are availaibe upon request.

For each reform, we also simulate a basic response to changes in marginal tax rates. We differentiate between elasticities of men and women. And among men and women, we make another distinction between intensive elasticities at the top (small responses to small variations in marginal tax rates, e.g. a one-hour increase in weekly work time) of the income distribution, and extensive elasticities at the bottom (stronger responses to higher variations in marginal tax rates, like the decision to start working, or to switch from a part-time job to a full-time job).

The issue of elasticities raises the following questions: what are reasonable elasticities to use, for men and women? What kind of elasticity, from intensive and extensive, should be taken into account, depending on the level on income? What elasticity levels must we suppose in order to make the reform fully feasible, or in order to compensate as many losers as possible?

The next section briefly describes the elasticities used, before going into individualization scenarios.

We believe that the third scenario is the most interesting one: the reader with little time is advised to begin with section 6.5 page 91.

6.2 Labor Supply Elasticities and Responses to reforms

In order to evaluate the efficiency gains brought by our reform scenarios, we need to compute the labor supply response as a function of the variation of marginal tax rate induced by our reform simulations, and the intensive and extensive labor supply elasticities.

6.2.1 Intensive Elasticities

Intensive elasticities are the general case: they describe the response of individuals to a small variation in their tax rates. This is the likely case for people who are already working, and

who might decide to increase or reduce their work time by a few hours.

We call ζ_s^i the individual's intensive labor supply elasticity, with $s = M$ for men and $s = W$ for women. Let τ_0 be the previous tax rate of the individual, and τ_1 be the new marginal tax rate, resulting of the reform. We call G the gross income, which we identify with labor supply.

Then, by definition of labor supply elasticities, we have:

$$\zeta_s^i = \frac{\frac{\partial G}{G}}{\frac{\partial(1-\tau)}{1-\tau}}$$

Which leads us to:

$$\Delta G \simeq \zeta_s^i \cdot \frac{\tau_0 - \tau_1}{1 - \tau_0} \cdot G$$

For now, we set

$$\zeta^i_{\text{men}} = 0 \quad \text{and}$$

$$\zeta^i_{\text{women}} = \frac{1}{2}$$

6.2.2 Extensive Elasticities

In our simulations, we apply extensive elasticities only to people with 0 labor income. We model their labor market entry decision as follows: we suppose an extensive labor supply elasticity of ζ_s^e, which, following the results of Piketty (1998), we calibrate to 98% for women. We leave them to 0% for men.

We model labor market entry as taking a minimum wage full time job, meaning an annual gross labor income of 15 852€. Then we suppose that every zero-labor-income person has a probability P to enter the labor market, depending on her extensive labor supply elasticity and the variation in marginal tax rates in the following way:

$$P = \zeta_s^e \cdot \frac{\tau_0 - \tau_1}{1 - \tau_0}$$

For example, if $\zeta_s^e = 1$, a person whose labor income is 0 and who used to face a 50% marginal tax rate under the old system and now faces a 40% marginal tax rate has a $1 \cdot 10/50 = 20\%$ probability to enter the labour market and earn 15 852€ a year.

6.3 First Scenario

6.3.1 The schedule

This table aims at reproducing contribution rates faced by singles with no children in the simplest case. Children are treated with the lump-sum reform described above.

gross income	average tax rate
0	0
12 766	0,0%
13 565	1,5%
15 170	1,6%
21 640	11,9%
35 830	14,4%
95 559	24,2%
181 357	31,9%
1 000 000 and above	40,0%

6.3.2 Description of measures presented

The following tables, that describe the effects of the reform at the household and at the individual level contain the following information:

current total tax gives an idea of the amount levied by the current system. It is decomposed in two variables: *current tax revenue*, that describes the aggregate amount of positive tax collected for each fractile, and *current spendings*, that describes the amount spent on negative taxes (benefits). Same goes for *new total taxes*, *new tax revenue* and *new spendings*.

These variables only measure the effects of the change in schedules, and do not yet take into account variations in labor supply.

Fiscal gain estimates the variation of collected tax amount due to *labor supply response*, which is the amount by which individuals increase their labor supply in response to the variation in marginal tax rate they face, according to their labor supply elasticity.

Households better off and *households worse off* show, for each fractile, the proportion of households that find themselves better off or worse off in terms of taxes paid or benefits received after the reform. These variables focus on the change of schedule, and do not include the effects of variations in labor supply responses.

Note that given our calibrations about labor supply elasticities, only women react to changes in marginal tax rates, which makes the results easier to read.

Variables *better off (with response)* and *worse off (with response)* do that: they include the effect of the reform on labor supply (and hence on household income) and the variation in taxes triggered by this effect in the comparison of before and after reform situation.

Variables *increased marginal rates* and *decreased marginal rates* measure the proportion of households in which at least one member faces an increase (resp decrease) in marginal tax rates after the reform. This means that in tables that compare households, the sum of these two variables is not necessarily 100%. In tables studying individuals, they are simply the proportion of individuals whose marginal increase (resp decrease), and their sum is 100%.

Finally, *new marginal tax rate* and *current marginal tax rate* compare new and current marginal tax rates. It should be noted that average and fractile-average marginal tax rates include a weighing of rates by income, as described in section H of the appendix[27]. This gives the illusion that our reforms yield strong increases in marginal tax rates, when it is not always the case: indeed, with this computation, marginal tax rates of high-income individuals have a strong influence on the average, when marginal tax rates of zero income individuals(who should benefit from the reform) have none. This is the same for each fractile: the top of the fractile weighs more than the bottom.

The general increase in marginal rates comes from the children-related reform: children

[27] In the case of couples presented in household-specific tables, an income-weighting is also done between spouses.

used to reduce their household marginal income tax rates, which is no longer the case, since a lump-sum benefit is neutral on marginal tax rates. As we show in section 6.8, and in section G of the appendix, labor supply response is proportionally higher if we focus on people with no children.

6.3.3 Redistributive and marginal tax rate effects: households

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
	736,11 Bn	**61,16 Bn**	**51,53 Bn**	**81,57 Bn**	**30,04 Bn**	**84,41 Bn**	**23,25 Bn**	**-0,24 Bn**	**9,22 Bn**
0-10	2,74 Bn	-13,12 Bn	-13,55 Bn	-0,00 Bn	13,55 Bn	0,00 Bn	13,13 Bn	0,02 Bn	0,63 Bn
10-20	14,41 Bn	-4,54 Bn	-5,28 Bn	-0,00 Bn	5,28 Bn	0,02 Bn	4,57 Bn	0,04 Bn	0,21 Bn
20-30	21,06 Bn	-1,55 Bn	-2,46 Bn	0,16 Bn	2,62 Bn	0,32 Bn	1,87 Bn	-0,50 Bn	0,26 Bn
30-40	30,09 Bn	0,17 Bn	-0,89 Bn	1,13 Bn	2,02 Bn	1,30 Bn	1,13 Bn	-0,05 Bn	0,00 Bn
40-50	41,67 Bn	2,06 Bn	0,95 Bn	2,80 Bn	1,84 Bn	2,90 Bn	0,83 Bn	-0,29 Bn	-0,27 Bn
50-60	54,80 Bn	3,89 Bn	2,29 Bn	4,17 Bn	1,87 Bn	4,51 Bn	0,61 Bn	-0,01 Bn	0,29 Bn
60-70	69,30 Bn	5,67 Bn	3,68 Bn	5,31 Bn	1,63 Bn	6,16 Bn	0,48 Bn	2,48 Bn	7,54 Bn
70-80	93,01 Bn	8,22 Bn	6,12 Bn	7,13 Bn	1,00 Bn	8,63 Bn	0,40 Bn	-0,98 Bn	0,95 Bn
80-90	134,17 Bn	13,91 Bn	12,20 Bn	12,39 Bn	0,18 Bn	14,07 Bn	0,16 Bn	-0,79 Bn	-1,48 Bn
90-95	93,87 Bn	11,21 Bn	11,19 Bn	11,19 Bn	0,00 Bn	11,24 Bn	0,02 Bn	-0,24 Bn	-0,47 Bn
95-99	114,28 Bn	17,62 Bn	19,00 Bn	19,00 Bn	0,00 Bn	17,62 Bn	0,00 Bn	0,00 Bn	0,75 Bn
99-99_9	50,34 Bn	11,71 Bn	12,68 Bn	12,68 Bn	.	11,71 Bn	0,00 Bn	0,07 Bn	0,64 Bn
99.9+	16,32 Bn	5,88 Bn	5,58 Bn	5,58 Bn	0,00 Bn	5,88 Bn	.	0,02 Bn	0,13 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
	67%	**33%**	**63%**	**37%**	**83%**	**50%**	**26%**	**25%**
0-10	40%	60%	43%	57%	100%	0%	34%	36%
10-20	75%	25%	81%	19%	100%	0%	33%	36%
20-30	69%	31%	77%	23%	100%	18%	24%	30%
30-40	76%	24%	72%	28%	99%	37%	34%	33%
40-50	71%	29%	65%	35%	97%	64%	32%	27%
50-60	73%	27%	78%	22%	90%	29%	18%	22%
60-70	78%	22%	63%	37%	80%	82%	20%	24%
70-80	76%	24%	62%	38%	69%	74%	23%	26%
80-90	76%	24%	61%	39%	59%	74%	23%	19%
90-95	59%	41%	51%	49%	53%	89%	24%	20%
95-99	39%	61%	47%	53%	65%	69%	30%	27%
99-99.9	30%	70%	46%	54%	85%	72%	36%	37%
99.9+	86%	14%	89%	11%	97%	25%	39%	40%

Table 34: 1-i:Impact of reform with fully individual implementation, on fractiles of households

6.3.4 Redistributive and marginal tax rate effects: individuals

gender	fractile	Fractile lower limit	gross income	current overall taxes	new total taxes	better off	worse off
All			**24 499**	**2 035**	**2 722**	**40.9%**	**59.1%**
All	0-20	0.00	1 642	-2 998	-3 674	61.1%	38.9%
All	20-30	7324.58	10 602	-924	-907	70.7%	29.3%
All	30-40	13555.15	15 941	267	535	53.8%	46.2%
All	40-50	18054.87	19 705	1 107	1 750	39.8%	60.2%
All	50-60	21312.12	22 964	1 775	2 777	27.0%	73.0%
All	60-70	24685.28	26 567	2 411	3 388	26.6%	73.4%
All	70-80	28653.63	31 311	3 188	4 256	24.5%	75.5%
All	80-90	34391.58	39 019	4 524	5 829	21.1%	78.9%
All	90-95	45314.48	51 261	7 009	8 703	26.0%	74.0%
All	95-99	59684.15	77 401	13 085	16 684	20.9%	79.1%
All	99-99.9	113413.14	155 221	38 112	45 691	17.2%	82.8%
All	99.9+	283436.18	502 855	183 060	179 555	70.6%	29.4%
Women			**18 665**	**915**	**1 097**	**49.0%**	**51.0%**
Women	0-20	0.00	1 457	-2 808	-3 713	65.0%	35.0%
Women	20-30	7324.58	10 583	-839	-904	71.5%	28.5%
Women	30-40	13555.15	15 904	344	526	57.9%	42.1%
Women	40-50	18054.87	19 676	1 172	1 739	41.1%	58.9%
Women	50-60	21312.12	22 922	1 873	2 770	27.4%	72.6%
Women	60-70	24685.28	26 566	2 550	3 388	29.7%	70.3%
Women	70-80	28653.63	31 299	3 392	4 254	28.4%	71.6%
Women	80-90	34391.58	38 856	4 805	5 794	27.6%	72.4%
Women	90-95	45314.48	50 986	7 514	8 632	36.4%	63.6%
Women	95-99	59684.15	75 836	14 177	16 150	35.1%	64.9%
Women	99-99.9	113413.14	152 209	41 734	44 502	34.4%	65.6%
Women	99.9+	283436.18	494 641	189 435	176 267	88.6%	11.4%
Men			**30 243**	**3 138**	**4 321**	**33.0%**	**67.0%**

Table 35: 1-i:Impact of reform with fully individual implementation, on individuals

fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**51.8%**	**48.2%**	**307**	**40.3%**	**59.7%**	**25.4%**	**26.1%**
0-20	78.7%	21.3%	217	62.6%	37.4%	36.5%	32.3%
20-30	75.0%	25.0%	1 506	67.0%	33.0%	35.4%	34.5%
30-40	58.6%	41.4%	1 631	51.3%	48.7%	28.1%	23.1%
40-50	18.8%	81.2%	-930	24.5%	75.5%	28.3%	40.3%
50-60	65.1%	34.9%	167	34.9%	65.1%	23.2%	18.6%
60-70	63.4%	36.6%	162	32.0%	68.0%	21.3%	17.5%
70-80	16.2%	83.8%	-15	18.6%	81.4%	19.1%	19.1%
80-90	26.7%	73.3%	124	23.5%	76.5%	20.9%	21.5%
90-95	45.3%	54.7%	92	30.3%	69.7%	23.5%	25.5%
95-99	25.0%	75.0%	-187	20.7%	79.3%	28.4%	33.2%
99-99.9	37.2%	62.8%	131	18.5%	81.5%	37.2%	38.7%
99.9+	80.1%	19.9%	630	71.1%	28.9%	40.3%	39.3%
Women	**55.0%**	**45.0%**	**619**	**47.7%**	**52.3%**	**24.6%**	**25.2%**
0-20	71.9%	28.1%	310	67.2%	32.8%	38.0%	32.3%
20-30	68.4%	31.6%	2 487	65.3%	34.7%	37.7%	34.0%
30-40	54.9%	45.1%	2 882	53.3%	46.7%	26.5%	22.7%
40-50	14.3%	85.7%	-1 860	10.4%	89.6%	24.4%	40.2%
50-60	67.5%	32.5%	383	45.6%	54.4%	20.3%	18.8%
60-70	68.3%	31.7%	391	43.0%	57.0%	19.2%	17.5%
70-80	19.9%	80.1%	-36	14.0%	86.0%	18.6%	19.1%
80-90	34.9%	65.1%	330	34.1%	65.9%	22.2%	21.5%
90-95	59.1%	40.9%	298	50.2%	49.8%	25.7%	25.4%
95-99	41.6%	58.4%	-848	34.0%	66.0%	31.0%	33.0%
99-99.9	55.3%	44.7%	924	43.7%	56.3%	39.4%	38.8%
99.9+	83.8%	16.2%	5 439	93.3%	6.7%	40.6%	39.3%
Men	48.6%	51.4%	0	33.0%	67.0%	25.8%	26.6%

Table 36: 1-i:Impact of reform with fully individual implementation, on individuals (continued)

6.3.5 Summary and labor supply responses

fractile	Fractile lower limit	Husband's gross income	Woman's labour supply reaction	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
		17 185	**971**	**53%**	**47%**	**25%**	**24%**
0-10	0	11 088	-293	21%	79%	27%	24%
10-20	9 039	11 983	192	38%	62%	26%	23%
20-30	17 258	14 164	11 985	50%	50%	26%	27%
30-40	21 323	15 045	749	57%	43%	26%	25%
40-50	24 516	16 186	-3 347	63%	37%	25%	23%
50-60	27 752	17 807	-837	70%	30%	24%	20%
60-70	31 727	18 857	-549	69%	31%	24%	19%
70-80	36 938	20 183	-313	67%	33%	24%	21%
80-90	44 857	22 468	267	55%	45%	24%	24%
90-95	62 173	23 451	1 023	45%	55%	26%	29%
95-99	85 269	24 258	2 125	35%	65%	28%	35%
99-99_9	163 091	25 398	4 735	9%	91%	30%	40%
99.9+	419 520	35 016	5 706	4%	96%	34%	41%

Table 37: 1-i:Labor supply responses of married women, ranked by their husband's income

These tables are not commented one by one, but compared across the three scenarios and their variants in section 6.8.

6.4 Second Scenario

6.4.1 The schedule

gross income	average tax rate
0	0,0%
18 280	0,0%
19 204	1,5%
23 137	1,6%
31 001	3,2%
44 715	12,1%
71 663	30,0%
190 440	24,2%
2 100 000 and above	40,0%

This schedule aims at reproducing the average tax rates faced by couples. This schedule has many flaws and side effects, which are presented in section 6.8.

The effects are described with the same set of tables than for the previous scenario. A guide to reading these tables is available in section 6.3.2 page 77.

6.4.2 Redistributive and marginal tax rate effects: households

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
	736,11 Bn	**61,16 Bn**	**-3,88 Bn**	**55,21 Bn**	**59,09 Bn**	**84,41 Bn**	**23,25 Bn**	**-8,10 Bn**	**7,00 Bn**
0-10	2,74 Bn	-13,12 Bn	-18,74 Bn	-0,00 Bn	18,74 Bn	0,00 Bn	13,13 Bn	0,00 Bn	0,54 Bn
10-20	14,41 Bn	-4,54 Bn	-8,92 Bn	-0,00 Bn	8,92 Bn	0,02 Bn	4,57 Bn	0,03 Bn	0,16 Bn
20-30	21,06 Bn	-1,55 Bn	-5,59 Bn	-0,00 Bn	5,59 Bn	0,32 Bn	1,87 Bn	-0,05 Bn	-0,47 Bn
30-40	30,09 Bn	0,17 Bn	-3,89 Bn	0,02 Bn	3,92 Bn	1,30 Bn	1,13 Bn	-3,31 Bn	-0,60 Bn
40-50	41,67 Bn	2,06 Bn	-3,50 Bn	0,37 Bn	3,87 Bn	2,90 Bn	0,83 Bn	0,04 Bn	3,21 Bn
50-60	54,80 Bn	3,89 Bn	-4,16 Bn	0,58 Bn	4,75 Bn	4,51 Bn	0,61 Bn	-0,05 Bn	1,50 Bn
60-70	69,30 Bn	5,67 Bn	-4,18 Bn	1,06 Bn	5,24 Bn	6,16 Bn	0,48 Bn	2,50 Bn	7,85 Bn
70-80	93,01 Bn	8,22 Bn	-2,27 Bn	2,62 Bn	4,89 Bn	8,63 Bn	0,40 Bn	-1,43 Bn	-1,33 Bn
80-90	134,17 Bn	13,91 Bn	2,96 Bn	5,88 Bn	2,91 Bn	14,07 Bn	0,16 Bn	-2,67 Bn	-2,05 Bn
90-95	93,87 Bn	11,21 Bn	8,03 Bn	8,26 Bn	0,22 Bn	11,24 Bn	0,02 Bn	-1,67 Bn	-1,78 Bn
95-99	114,28 Bn	17,62 Bn	20,32 Bn	20,32 Bn	0,00 Bn	17,62 Bn	0,00 Bn	-1,38 Bn	-1,14 Bn
99-99.9	50,34 Bn	11,71 Bn	11,59 Bn	11,59 Bn	.	11,71 Bn	0,00 Bn	-0,15 Bn	0,81 Bn
99.9+	16,32 Bn	5,88 Bn	4,48 Bn	4,48 Bn	0,00 Bn	5,88 Bn	.	0,04 Bn	0,29 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
	92%	**8%**	**90%**	**10%**	**90%**	**40%**	**27%**	**25%**
0-10	98%	2%	98%	2%	100%	0%	34%	36%
10-20	99%	1%	99%	1%	100%	1%	34%	36%
20-30	99%	1%	99%	1%	100%	24%	33%	30%
30-40	100%	0%	98%	2%	100%	26%	40%	33%
40-50	100%	0%	100%	0%	99%	3%	4%	27%
50-60	100%	0%	99%	1%	96%	12%	9%	22%
60-70	100%	0%	98%	2%	88%	50%	16%	24%
70-80	100%	0%	92%	8%	85%	84%	26%	26%
80-90	92%	8%	85%	15%	77%	71%	28%	19%
90-95	73%	27%	71%	29%	71%	96%	37%	20%
95-99	36%	64%	36%	64%	61%	74%	36%	27%
99-99.9	44%	56%	56%	44%	99%	38%	25%	37%
99.9+	94%	6%	94%	6%	99%	13%	33%	40%

Table 38: 2-i:Impact of reform with fully individual implementation, on fractiles of households

6.4.3 Redistributive and marginal tax rate effects: individuals

gender	fractile	Fractile lower limit	gross income	current overall taxes	new total taxes	better off	worse off
All			**24 499**	**2 035**	**877**	**79.8%**	**20.2%**
All	0-20	0.00	1 642	-2 998	-5 539	85.1%	14.9%
All	20-30	7324.58	10 602	-924	-2 720	87.7%	12.3%
All	30-40	13555.15	15 941	267	-1 015	86.7%	13.3%
All	40-50	18054.87	19 705	1 107	148	84.1%	15.9%
All	50-60	21312.12	22 964	1 775	377	87.6%	12.4%
All	60-70	24685.28	26 567	2 411	608	91.5%	8.5%
All	70-80	28653.63	31 311	3 188	1 153	92.1%	7.9%
All	80-90	34391.58	39 019	4 524	3 333	78.5%	21.5%
All	90-95	45314.48	51 261	7 009	8 531	29.1%	70.9%
All	95-99	59684.15	77 401	13 085	21 559	1.1%	98.9%
All	99-99.9	113413.14	155 221	38 112	40 359	35.3%	64.7%
All	99.9+	283436.18	502 855	183 060	144 016	92.7%	7.3%
Women			**18 665**	**915**	**-814**	**83.3%**	**16.7%**
Women	0-20	0.00	1 457	-2 808	-5 574	83.0%	17.0%
Women	20-30	7324.58	10 583	-839	-2 702	86.1%	13.9%
Women	30-40	13555.15	15 904	344	-1 015	86.9%	13.1%
Women	40-50	18054.87	19 676	1 172	143	84.5%	15.5%
Women	50-60	21312.12	22 922	1 873	376	88.9%	11.1%
Women	60-70	24685.28	26 566	2 550	608	92.6%	7.4%
Women	70-80	28653.63	31 299	3 392	1 151	93.5%	6.5%
Women	80-90	34391.58	38 856	4 805	3 275	83.6%	16.4%
Women	90-95	45314.48	50 986	7 514	8 387	39.1%	60.9%
Women	95-99	59684.15	75 836	14 177	20 991	2.7%	97.3%
Women	99-99.9	113413.14	152 209	41 734	39 735	50.5%	49.5%
Women	99.9+	283436.18	494 641	189 435	140 471	97.9%	2.1%
Men			**30 243**	**3 138**	**2 542**	**76.3%**	**23.7%**

Table 39: 2-i:Impact of reform with fully individual implementation, on individuals

fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**63.9%**	**36.1%**	**233**	**78.2%**	**21.8%**	**25.4%**	**27.0%**
0-20	77.8%	22.2%	180	85.6%	14.4%	36.5%	33.2%
20-30	73.4%	26.6%	1 552	84.1%	15.9%	35.4%	32.4%
30-40	51.5%	48.5%	644	83.2%	16.8%	28.1%	31.7%
40-50	83.9%	16.1%	372	87.0%	13.0%	28.3%	19.5%
50-60	99.9%	0.1%	1 105	91.7%	8.3%	23.2%	4.1%
60-70	97.3%	2.7%	824	93.6%	6.4%	21.3%	7.8%
70-80	46.5%	53.5%	45	90.6%	9.4%	19.1%	18.4%
80-90	4.0%	96.0%	-1 047	65.1%	34.9%	20.9%	34.1%
90-95	0.0%	100.0%	-2 601	18.3%	81.7%	23.5%	51.0%
95-99	44.1%	55.9%	-1 382	3.1%	96.9%	28.4%	41.5%
99-99.9	97.7%	2.3%	3 255	41.1%	58.9%	37.2%	21.3%
99.9+	95.2%	4.8%	3 625	92.7%	7.3%	40.3%	33.2%
Women	**64.4%**	**35.6%**	**470**	**80.1%**	**19.9%**	**24.6%**	**25.4%**
0-20	71.0%	29.0%	257	83.7%	16.3%	38.0%	33.1%
20-30	66.3%	33.7%	2 563	80.1%	19.9%	37.7%	32.2%
30-40	46.8%	53.2%	1 138	80.7%	19.3%	26.5%	31.4%
40-50	80.8%	19.2%	744	90.3%	9.7%	24.4%	20.2%
50-60	99.9%	0.1%	2 544	98.3%	1.7%	20.3%	4.0%
60-70	98.6%	1.4%	1 991	97.7%	2.3%	19.2%	7.8%
70-80	50.3%	49.7%	109	89.7%	10.3%	18.6%	18.3%
80-90	6.5%	93.5%	-2 795	47.9%	52.1%	22.2%	33.8%
90-95	0.0%	100.0%	-8 447	4.0%	96.0%	25.7%	50.6%
95-99	46.9%	53.1%	-6 262	11.8%	88.2%	31.0%	43.4%
99-99.9	99.6%	0.4%	23 025	91.7%	8.3%	39.4%	21.2%
99.9+	96.0%	4.0%	31 283	97.7%	2.3%	40.6%	33.1%
Men	**63.5%**	**36.5%**	**0**	**76.3%**	**23.7%**	**25.8%**	**27.9%**

Table 40: 2-i:Impact of reform with fully individual implementation, on individuals (continued)

6.4.4 Summary and labor supply responses

fracti-le	Fractile lower limit	Husband's gross income	Woman's labour supply response	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
		17 185	**766**	**45%**	**55%**	**25%**	**24%**
0-10	0	11 088	-366	12%	88%	27%	24%
10-20	9 039	11 983	129	28%	72%	24%	23%
20-30	17 258	14 164	10 931	35%	65%	23%	27%
30-40	21 323	15 045	852	40%	60%	22%	25%
40-50	24 516	16 186	-2 956	48%	52%	21%	23%
50-60	27 752	17 807	-588	56%	44%	22%	20%
60-70	31 727	18 857	-490	60%	40%	23%	19%
70-80	36 938	20 183	-492	61%	39%	25%	21%
80-90	44 857	22 468	-495	59%	41%	29%	24%
90-95	62 173	23 451	114	53%	47%	30%	29%
95-99	85 269	24 258	1 529	48%	52%	31%	35%
99-99_9	163 091	25 398	4 451	16%	84%	30%	40%
99.9+	419 520	35 016	6 412	9%	91%	32%	41%

Table 41: 2-i:Labor supply responses of married women, ranked by their husband's income

We now turn to the third scenario, which we implement in a more refined way: fully individually (as in previous scenarios), semi-individually, and, in the appendix, fully and semi individually but on households with no children only, in order to set aside the issue of the treatment of children.

6.5 Third Scenario: schedule

From now on, we would like to experiment the following schedule (presented in table 42 below). As regards the bottom of the income distribution, we stick to our objective of the previous sections, which is to create a schedule that remains close to the exiting schedule faced by couples without children.

However, we depart from this goal as regards the rates applied to the top of the distribution: we set the average tax rate of very high incomes to 70%. Figure 14 illustrates this new schedule, and figure 15 compares this schedule to average rates currently faced by couples without children.

Figure 15 (top) focuses on the bottom of the income distribution, while 15 (bottom) gives a broader view, which shows the very strong increase in tax rates for high incomes induces by this schedule.

In these comparisons, we mean by "couple without children" working couples over 25, whose only source of income is salary, and who do not have any special tax reduction (like disability reductions).

Gross labor income	mean tax rate
0	0
12 000	**0,00%**
24 000	**10,00%**
60 000	**20,00%**
120 000	**30,00%**
360 000	**50,00%**
1 200 000	**70,00%**
1 500 000	**70,00%**

Table 42: Tax schedule simulated in section 6.5

6.6 Third schedule with fully individual implementation

We now compare the effects of this new hypothetical schedule when applied to the actual population of taxpayers. We study the two alternatives presented in the introduction of

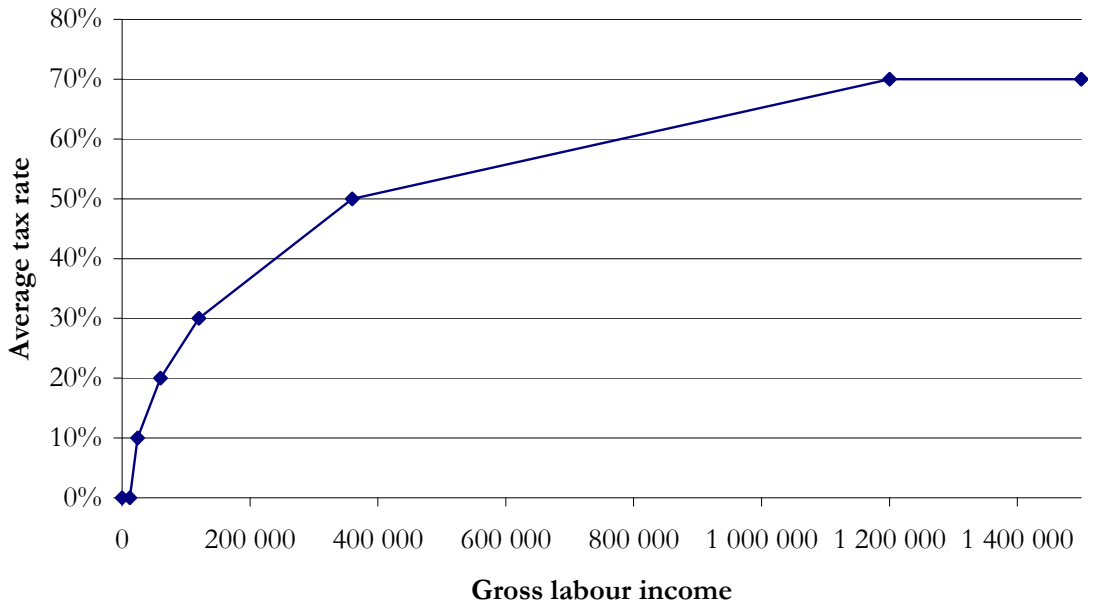

Figure 14: Experimental tax schedule number 3

this section: a fully individual implementation, and a semi-individual implementation. We study the redistributive effects of the reform, as well as the effects on marginal rates faced by individuals and expected elastic responses of labor supply.

We study all households whose head is over 25 and below 65. However, since the lump-sum children benefit reform has strong effects on redistribution effects as well as on marginal tax rates, we also provide tables computed only on households without children. These tables are in the appendix.

6.6.1 Redistributive and marginal tax rate effects: households

A guide to reading these tables is available in section 6.3.2 page 77.

Table 43 shows the redistributive impacts of full individual implementation of the above schedule on a household basis: as an be seen here, labor supply response is small (less than 0,5%), and the overall cost of the reforms in terms of overall benefit spendings is very large. Positive effects on labor supply are very concentrated on the 60-70 fractile.

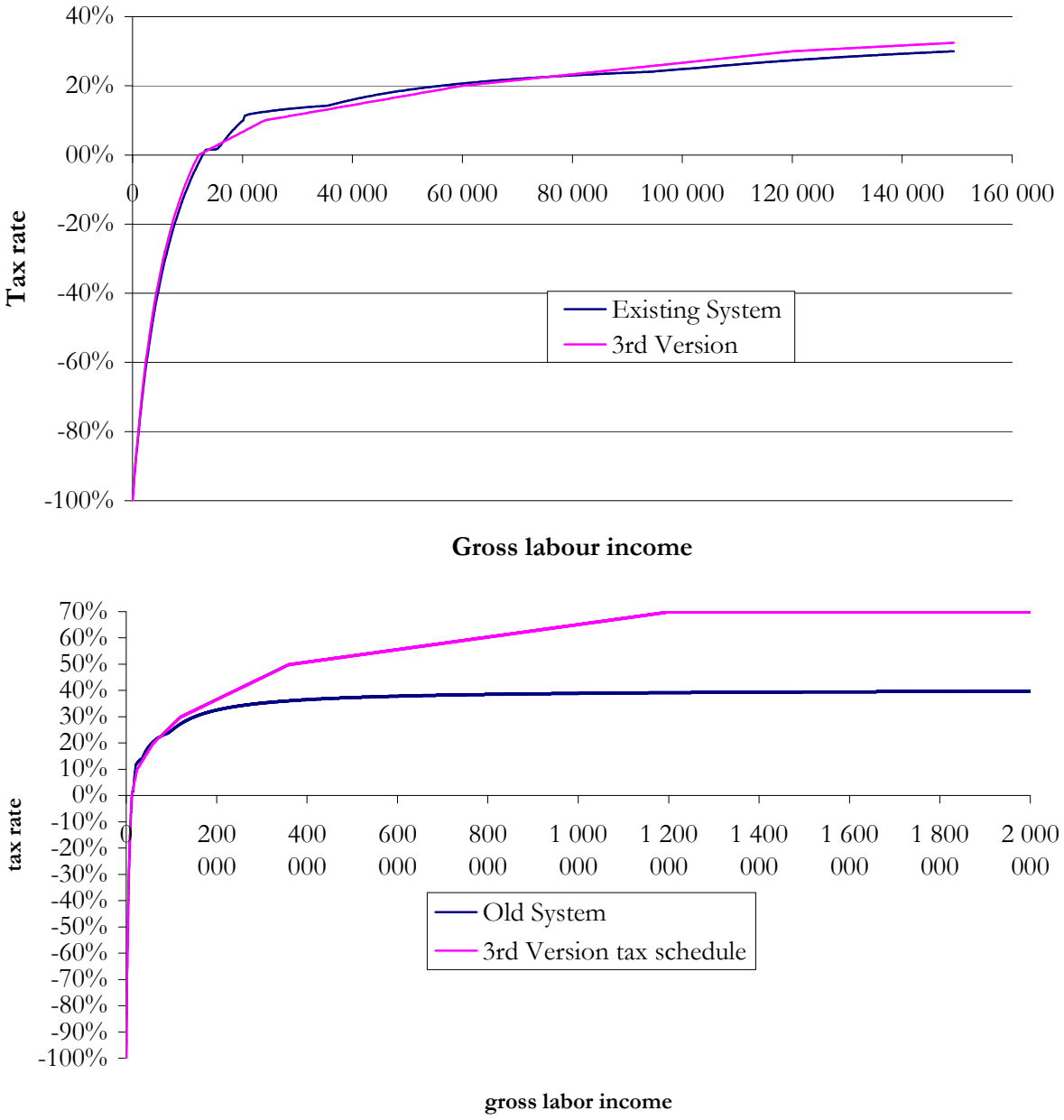

Figure 15: Comparison of the third schedule and tax rates currently faced by couples without children

The upper figure focuses on incomes below 150 000€ while the second one gives a broader view of tax rates on very high incomes.

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
All	**736,11 Bn**	**61,16 Bn**	**42,29 Bn**	**81,87 Bn**	**39,57 Bn**	**84,41 Bn**	**23,25 Bn**	**-0,09 Bn**	**3,42 Bn**
0-10	2,74 Bn	-13,12 Bn	-18,17 Bn	-0,00 Bn	18,17 Bn	0,00 Bn	13,13 Bn	-0,12 Bn	-0,12 Bn
10-20	14,41 Bn	-4,54 Bn	-6,01 Bn	-0,00 Bn	6,01 Bn	0,02 Bn	4,57 Bn	-0,60 Bn	-1,01 Bn
20-30	21,06 Bn	-1,55 Bn	-2,59 Bn	0,23 Bn	2,83 Bn	0,32 Bn	1,87 Bn	0,10 Bn	0,74 Bn
30-40	30,09 Bn	0,17 Bn	-1,56 Bn	0,93 Bn	2,49 Bn	1,30 Bn	1,13 Bn	0,22 Bn	1,30 Bn
40-50	41,67 Bn	2,06 Bn	-0,73 Bn	1,86 Bn	2,60 Bn	2,90 Bn	0,83 Bn	0,03 Bn	0,38 Bn
50-60	54,80 Bn	3,89 Bn	0,54 Bn	3,30 Bn	2,76 Bn	4,51 Bn	0,61 Bn	-0,17 Bn	-0,18 Bn
60-70	69,30 Bn	5,67 Bn	1,98 Bn	4,52 Bn	2,54 Bn	6,16 Bn	0,48 Bn	2,59 Bn	4,55 Bn
70-80	93,01 Bn	8,22 Bn	4,52 Bn	6,25 Bn	1,73 Bn	8,63 Bn	0,40 Bn	-0,51 Bn	0,87 Bn
80-90	134,17 Bn	13,91 Bn	10,59 Bn	11,00 Bn	0,41 Bn	14,07 Bn	0,16 Bn	-0,60 Bn	-1,74 Bn
90-95	93,87 Bn	11,21 Bn	10,80 Bn	10,81 Bn	0,00 Bn	11,24 Bn	0,02 Bn	-0,29 Bn	-0,84 Bn
95-99	114,28 Bn	17,62 Bn	19,97 Bn	19,98 Bn	0,00 Bn	17,62 Bn	0,00 Bn	-0,21 Bn	-0,12 Bn
99-99_9	50,34 Bn	11,71 Bn	14,40 Bn	14,40 Bn	.	11,71 Bn	0,00 Bn	-0,16 Bn	0,00 Bn
99.9+	16,32 Bn	5,88 Bn	8,56 Bn	8,56 Bn	0,00 Bn	5,88 Bn	.	-0,33 Bn	-0,39 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
All	**78%**	**22%**	**75%**	**25%**	**78%**	**75%**	**28%**	**25%**
0-10	96%	4%	96%	4%	89%	95%	55%	36%
10-20	74%	26%	59%	41%	86%	94%	53%	36%
20-30	52%	48%	69%	31%	95%	37%	17%	30%
30-40	79%	21%	89%	11%	97%	21%	21%	33%
40-50	90%	10%	84%	16%	96%	67%	26%	27%
50-60	86%	14%	84%	16%	90%	57%	21%	22%
60-70	87%	13%	78%	22%	80%	87%	21%	24%
70-80	86%	14%	75%	25%	71%	72%	24%	26%
80-90	86%	14%	78%	22%	50%	92%	25%	19%
90-95	70%	30%	57%	43%	40%	96%	27%	20%
95-99	30%	70%	31%	69%	63%	92%	34%	27%
99-99_9	5%	95%	6%	94%	72%	99%	46%	37%
99.9+	0%	100%	0%	100%	71%	100%	68%	40%

Table 43: Impact of reform with fully individual implementation, on fractiles of households

6.6.2 Redistributive and marginal tax rate effects: individuals

gender	fractile	Pf	gross income	current overall taxes	new total taxes	better off	worse off
All	**All**		**24 499**	**2 035**	**2 414**	**50.9%**	**49.1%**
All	0-20	0.00	1 642	-2 998	-5 213	82.9%	17.1%
All	20-30	7324.58	10 602	-924	-783	57.0%	43.0%
All	30-40	13555.15	15 941	267	538	54.7%	45.3%
All	40-50	18054.87	19 705	1 107	1 272	56.9%	43.1%
All	50-60	21312.12	22 964	1 775	2 097	47.0%	53.0%
All	60-70	24685.28	26 567	2 411	2 850	42.8%	57.2%
All	70-80	28653.63	31 311	3 188	3 775	39.1%	60.9%
All	80-90	34391.58	39 019	4 524	5 556	29.1%	70.9%
All	90-95	45314.48	51 261	7 009	9 054	23.6%	76.4%
All	95-99	59684.15	77 401	13 085	18 065	11.8%	88.2%
All	99-99_9	113413.14	155 221	38 112	52 372	3.4%	96.6%
All	99.9+	283436.18	502 855	183 060	279 283	0.0%	100.0%
Women	**All**		**18 665**	**915**	**528**	**59.2%**	**40.8%**
Women	0-20	0.00	1 457	-2 808	-5 285	81.0%	19.0%
Women	20-30	7324.58	10 583	-839	-783	60.4%	39.6%
Women	30-40	13555.15	15 904	344	531	58.9%	41.1%
Women	40-50	18054.87	19 676	1 172	1 266	58.7%	41.3%
Women	50-60	21312.12	22 922	1 873	2 086	51.0%	49.0%
Women	60-70	24685.28	26 566	2 550	2 850	46.8%	53.2%
Women	70-80	28653.63	31 299	3 392	3 772	44.0%	56.0%
Women	80-90	34391.58	38 856	4 805	5 514	36.9%	63.1%
Women	90-95	45314.48	50 986	7 514	8 965	33.4%	66.6%
Women	95-99	59684.15	75 836	14 177	17 486	21.9%	78.1%
Women	99-99_9	113413.14	152 209	41 734	50 896	8.3%	91.7%
Women	99.9+	283436.18	494 641	189 435	273 513	0.1%	99.9%
Men	**All**		**30 243**	**3 138**	**4 271**	**42.8%**	**57.2%**

Table 44: Impact of reform with fully individual implementation, on individuals

fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**30.1%**	**69.9%**	**114**	**49.3%**	**50.7%**	**25.4%**	**28.5%**
0-20	10.9%	89.1%	-62	83.1%	16.9%	36.5%	52.8%
20-30	37.1%	62.9%	532	49.1%	50.9%	35.4%	36.6%
30-40	72.2%	27.8%	1 848	59.7%	40.3%	28.1%	16.8%
40-50	50.1%	49.9%	218	56.5%	43.5%	28.3%	23.0%
50-60	30.3%	69.7%	-257	37.2%	62.8%	23.2%	25.4%
60-70	44.2%	55.8%	114	48.1%	51.9%	21.3%	18.1%
70-80	9.2%	90.8%	-146	33.1%	66.9%	19.1%	20.8%
80-90	26.2%	73.8%	-219	27.8%	72.2%	20.9%	25.2%
90-95	12.7%	87.3%	-595	21.6%	78.4%	23.5%	32.0%
95-99	7.1%	92.9%	-607	9.8%	90.2%	28.4%	36.8%
99-99_9	2.4%	97.6%	-1 558	2.6%	97.4%	37.2%	48.7%
99.9+	0.0%	100.0%	-14 498	0.0%	100.0%	40.3%	70.8%
Women	**31.7%**	**68.3%**	**230**	**55.8%**	**44.2%**	**24.6%**	**26.2%**
0-20	11.7%	88.3%	-88	81.3%	18.7%	38.0%	52.7%
20-30	40.5%	59.5%	878	47.3%	52.7%	37.7%	36.5%
30-40	70.2%	29.8%	3 265	67.8%	32.2%	26.5%	16.8%
40-50	43.0%	57.0%	436	57.9%	42.1%	24.4%	23.0%
50-60	28.9%	71.1%	-592	28.4%	71.6%	20.3%	25.5%
60-70	48.4%	51.6%	276	59.6%	40.4%	19.2%	18.1%
70-80	12.2%	87.8%	-358	29.2%	70.8%	18.6%	20.8%
80-90	34.5%	65.5%	-585	33.4%	66.6%	22.2%	25.1%
90-95	20.9%	79.1%	-1 932	26.8%	73.2%	25.7%	31.9%
95-99	15.4%	84.6%	-2 748	12.8%	87.2%	31.0%	36.3%
99-99_9	5.8%	94.2%	-11 017	3.2%	96.8%	39.4%	48.2%
99.9+	0.0%	100.0%	-125 102	0.0%	100.0%	40.6%	70.7%
Men	**28.4%**	**71.6%**	**0**	**42.8%**	**57.2%**	**25.8%**	**29.9%**

Table 45: Impact of reform with fully individual implementation, on individuals (continued)

6.6.3 Summary and labor supply response

fractile	Fractile lower limit	Husband's gross income	Woman's labor supply response	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
		17 185	**413**	**71%**	**29%**	**26%**	**24%**
0-10	0	11 088	-829	79%	21%	30%	24%
10-20	9 039	11 983	-63	81%	19%	27%	23%
20-30	17 258	14 164	8 327	68%	32%	25%	27%
30-40	21 323	15 045	426	77%	23%	25%	25%
40-50	24 516	16 186	-2 688	76%	24%	24%	23%
50-60	27 752	17 807	-817	77%	23%	24%	20%
60-70	31 727	18 857	-637	78%	22%	24%	19%
70-80	36 938	20 183	-509	74%	26%	25%	21%
80-90	44 857	22 468	-150	61%	39%	26%	24%
90-95	62 173	23 451	499	45%	55%	28%	29%
95-99	85 269	24 258	1 358	37%	63%	32%	35%
99-99_9	163 091	25 398	2 873	31%	69%	37%	40%
99.9+	419 520	35 016	921	26%	74%	49%	41%

Table 46: Labor supply responses of married women, ranked by their husband's income, in the fully individual system

6.7 Third scenario with semi-individual implementation

We now turn to a semi-individual implementation, which leaves household-based tax treatment at the bottom of the distribution. Specifically, when one household member is eligible to a negative tax rate, we then treat the household as a whole as one single individual, with no concept of income splitting. This treatment concerns about 40% of married couples. Other transition mechanisms could be thought of, in order to reduce this amount. The effects of this mechanism are discussed in section 6.8.

6.7.1 Redistributive and marginal tax rate effects: households

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
All	**736,11 Bn**	**61,16 Bn**	**59,45 Bn**	**86,44 Bn**	**26,99 Bn**	**84,41 Bn**	**23,25 Bn**	**0,30 Bn**	**10,04 Bn**
0-10	2,74 Bn	-13,12 Bn	-16,40 Bn	-0,00 Bn	16,40 Bn	0,00 Bn	13,13 Bn	-0,12 Bn	-0,13 Bn
10-20	14,41 Bn	-4,54 Bn	-4,45 Bn	-0,00 Bn	4,45 Bn	0,02 Bn	4,57 Bn	-0,60 Bn	-1,01 Bn
20-30	21,06 Bn	-1,55 Bn	-1,15 Bn	0,24 Bn	1,40 Bn	0,32 Bn	1,87 Bn	0,12 Bn	1,38 Bn
30-40	30,09 Bn	0,17 Bn	-0,21 Bn	0,97 Bn	1,18 Bn	1,30 Bn	1,13 Bn	0,25 Bn	1,92 Bn
40-50	41,67 Bn	2,06 Bn	0,90 Bn	1,97 Bn	1,06 Bn	2,90 Bn	0,83 Bn	0,09 Bn	0,85 Bn
50-60	54,80 Bn	3,89 Bn	2,68 Bn	3,60 Bn	0,92 Bn	4,51 Bn	0,61 Bn	-0,00 Bn	0,29 Bn
60-70	69,30 Bn	5,67 Bn	4,33 Bn	5,11 Bn	0,77 Bn	6,16 Bn	0,48 Bn	2,01 Bn	9,08 Bn
70-80	93,01 Bn	8,22 Bn	6,53 Bn	7,17 Bn	0,63 Bn	8,63 Bn	0,40 Bn	-0,03 Bn	0,44 Bn
80-90	134,17 Bn	13,91 Bn	12,00 Bn	12,14 Bn	0,13 Bn	14,07 Bn	0,16 Bn	-0,45 Bn	-1,50 Bn
90-95	93,87 Bn	11,21 Bn	11,43 Bn	11,43 Bn	0,00 Bn	11,24 Bn	0,02 Bn	-0,25 Bn	-0,78 Bn
95-99	114,28 Bn	17,62 Bn	20,60 Bn	20,60 Bn	0,00 Bn	17,62 Bn	0,00 Bn	-0,20 Bn	-0,11 Bn
99-99_9	50,34 Bn	11,71 Bn	14,59 Bn	14,59 Bn	.	11,71 Bn	0,00 Bn	-0,16 Bn	0,01 Bn
99.9+	16,32 Bn	5,88 Bn	8,58 Bn	8,58 Bn	0,00 Bn	5,88 Bn	.	-0,33 Bn	-0,39 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
All	**70%**	**30%**	**67%**	**33%**	**78%**	**71%**	**28%**	**25%**
0-10	90%	10%	89%	11%	89%	95%	55%	36%
10-20	60%	40%	45%	55%	86%	94%	53%	36%
20-30	38%	62%	59%	41%	95%	27%	17%	30%
30-40	68%	32%	81%	19%	97%	10%	21%	33%
40-50	83%	17%	77%	23%	96%	55%	25%	27%
50-60	80%	20%	77%	23%	90%	49%	20%	22%
60-70	80%	20%	68%	32%	80%	85%	20%	24%
70-80	77%	23%	66%	34%	71%	70%	23%	26%
80-90	77%	23%	70%	30%	50%	92%	25%	19%
90-95	63%	37%	51%	49%	40%	96%	27%	20%
95-99	28%	72%	29%	71%	63%	92%	34%	27%
99-99_9	5%	95%	6%	94%	72%	99%	45%	37%
99.9+	0%	100%	0%	100%	71%	100%	68%	40%

Table 47: Impact of reform with semi-individual implementation, on fractiles of households

6.7.2 Redistributive and marginal tax rate effects: individuals

gender	fractile	Fractile lower limit	gross income	current overall taxes	new total taxes	better off	worse off
All	**All**		**24 499**	**2 035**	**2 701**	**47.9%**	**52.1%**
All	0-20	0.00	1 642	-2 998	-2 723	44.9%	55.1%
All	20-30	7324.58	10 602	-924	-599	52.1%	47.9%
All	30-40	13555.15	15 941	267	273	61.8%	38.2%
All	40-50	18054.87	19 705	1 107	993	64.8%	35.2%
All	50-60	21312.12	22 964	1 775	1 771	56.4%	43.6%
All	60-70	24685.28	26 567	2 411	2 530	51.8%	48.2%
All	70-80	28653.63	31 311	3 188	3 468	47.8%	52.2%
All	80-90	34391.58	39 019	4 524	5 217	37.1%	62.9%
All	90-95	45314.48	51 261	7 009	8 685	25.5%	74.5%
All	95-99	59684.15	77 401	13 085	17 556	11.8%	88.2%
All	99-99_9	113413.14	155 221	38 112	51 715	3.4%	96.6%
All	99.9+	283436.18	502 855	183 060	278 632	0.0%	100.0%
Women	**All**		**18 665**	**915**	**1 414**	**46.6%**	**53.4%**
Women	0-20	0.00	1 457	-2 808	-2 194	36.4%	63.6%
Women	20-30	7324.58	10 583	-839	-401	52.1%	47.9%
Women	30-40	13555.15	15 904	344	457	61.3%	38.7%
Women	40-50	18054.87	19 676	1 172	1 214	60.6%	39.4%
Women	50-60	21312.12	22 922	1 873	2 035	52.9%	47.1%
Women	60-70	24685.28	26 566	2 550	2 795	48.7%	51.3%
Women	70-80	28653.63	31 299	3 392	3 718	45.8%	54.2%
Women	80-90	34391.58	38 856	4 805	5 464	38.2%	61.8%
Women	90-95	45314.48	50 986	7 514	8 897	33.9%	66.1%
Women	95-99	59684.15	75 836	14 177	17 380	21.9%	78.1%
Women	99-99_9	113413.14	152 209	41 734	50 776	8.3%	91.7%
Women	99.9+	283436.18	494 641	189 435	273 366	0.1%	99.9%
Men	**All**		**30 243**	**3 138**	**3 969**	**49.3%**	**50.7%**

Table 48: Impact of reform with semi individual implementation, on individuals

fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**32.8%**	**67.2%**	**334**	**46.4%**	**53.6%**	**25.4%**	**28.1%**
0-20	23.4%	76.6%	306	47.4%	52.6%	36.5%	43.1%
20-30	39.2%	60.8%	1 998	43.9%	56.1%	35.4%	30.6%
30-40	72.2%	27.8%	1 848	66.1%	33.9%	28.1%	16.8%
40-50	50.1%	49.9%	218	64.0%	36.0%	28.3%	23.0%
50-60	30.3%	69.7%	-257	46.1%	53.9%	23.2%	25.4%
60-70	44.2%	55.8%	114	56.8%	43.2%	21.3%	18.1%
70-80	9.2%	90.8%	-146	41.4%	58.6%	19.1%	20.8%
80-90	26.2%	73.8%	-219	35.4%	64.6%	20.9%	25.2%
90-95	12.7%	87.3%	-595	23.3%	76.7%	23.5%	32.0%
95-99	7.1%	92.9%	-607	9.8%	90.2%	28.4%	36.8%
99-99_9	2.4%	97.6%	-1 558	2.6%	97.4%	37.2%	48.7%
99.9+	0.0%	100.0%	-14 498	0.0%	100.0%	40.3%	70.8%
Women	**36.5%**	**63.5%**	**674**	**43.5%**	**56.5%**	**24.6%**	**25.3%**
0-20	27.4%	72.6%	437	40.0%	60.0%	38.0%	39.3%
20-30	43.2%	56.8%	3 299	38.5%	61.5%	37.7%	28.1%
30-40	70.2%	29.8%	3 265	68.8%	31.2%	26.5%	16.8%
40-50	43.0%	57.0%	436	59.0%	41.0%	24.4%	23.0%
50-60	28.9%	71.1%	-592	29.3%	70.7%	20.3%	25.5%
60-70	48.4%	51.6%	276	60.7%	39.3%	19.2%	18.1%
70-80	12.2%	87.8%	-358	30.2%	69.8%	18.6%	20.8%
80-90	34.5%	65.5%	-585	33.6%	66.4%	22.2%	25.1%
90-95	20.9%	79.1%	-1 932	26.8%	73.2%	25.7%	31.9%
95-99	15.4%	84.6%	-2 748	12.8%	87.2%	31.0%	36.3%
99-99_9	5.8%	94.2%	-11 017	3.2%	96.8%	39.4%	48.2%
99.9+	0.0%	100.0%	-125 102	0.0%	100.0%	40.6%	70.7%
Men	**29.1%**	**70.9%**	**0**	**49.3%**	**50.7%**	**25.8%**	**29.8%**

Table 49: Impact of reform with semi individual implementation, on individuals (continued)

6.7.3 Summary and labor supply responses

factile	Fractile lower limit	Husband's gross income	Woman's labour supply response	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
All		**17 185**	**1 202**	**63%**	**37%**	**25%**	**24%**
0-10	0	11 088	-831	79%	21%	30%	24%
10-20	9 039	11 983	1 131	53%	47%	23%	23%
20-30	17 258	14 164	14 325	42%	58%	22%	27%
30-40	21 323	15 045	1 306	60%	40%	22%	25%
40-50	24 516	16 186	-3 505	66%	34%	22%	23%
50-60	27 752	17 807	-643	75%	25%	22%	20%
60-70	31 727	18 857	-471	76%	24%	23%	19%
70-80	36 938	20 183	-352	73%	27%	24%	21%
80-90	44 857	22 468	-61	61%	39%	26%	24%
90-95	62 173	23 451	594	46%	54%	28%	29%
95-99	85 269	24 258	1 348	37%	63%	31%	35%
99-99_9	163 091	25 398	2 954	31%	69%	37%	40%
99.9+	419 520	35 016	867	26%	74%	49%	41%

Table 50: Labor supply responses of married women, ranked by their husband's income, in the semi-individual system

6.8 Comparison of the three scenarios

The first schedule, in which we implement a system that reproduces current contribution rates of singles without children, and treat all individuals separately, yields significant labor supply gains (+1,25%), but is quite demanding in terms of budget balance: spendings increase from 23Bn to 30Bn, and the fiscal gain triggered by labor supply responses is not close to compensating for it.

The second schedule, in which we reproduce contribution rates for couples seems to have all the disadvantages of the first one, and not its advantages: spendings skyrocket to 60Bn € (this is because we also give to individuals what couples earn in RSA in the current

system), and labor supply response is weaker. Hence, this scenario can be discarded.

All scenarios seem to make poorer households better off and richer households worse off, since richer households benefit more from income splitting. The redistributive effects measures computed on individuals (ant not on households) are much more erratic, but this is linked to our hypotheses on intra-household bargaining. This is not too much of an issue since the measure that matters the most to the political acceptability of such reforms is probably the one made on households.

None of our reforms are completely neutral from the point of view of across-households redistribution, which can make them less acceptable. It should be a direction for future research to try to maintain the efficiency gains we identify here while finding a way to reduce unwanted across-household redistribution. Surely, dealing with the issue of children-related benefits, and finding a better system than pure lump-sum per-child transfer could allow to achieve that.

As regards labor supply responses, they seem concentrated at the upper middle and the top of the income distribution (looking at wive's labor supply response as a function of their husband's income) in all the scenarios. This is where the income-splitting effect of income tax is the strongest, and corresponds to our expected gains of individualization. There is also a strong labor supply response in decile 20-30 of men's income: this corresponds to our hypothesis on extensive elasticities, that makes a significant number of women jump from zero income to minimum wage. These results are confirmed by a comparison with the simulation on households with no children in section G of the appendix.

One might be concerned with the effect of the 70% rate on high incomes of the third schedule. It is, in fact, reasonable: since most people that face such tax rates are men, the overall labour supply response of individuals that faces more than 40% tax rates in the new system is less than 0,53 Bn, which is very low when compared to the effect of women entering the labour market through the mechanism of extensive elasticities: in setting *3-f* (semi-individual implementation), more than 192 000 women enter the labour market, causing efficiency gains of 3,05 Bn.

The third scenario seems more interesting than the others, especially when comparing its fully individual version to its semi-individual version. The fully individual version yields

a weak labor supply response (less than half a percent), and very high spendings (40Bn). However, the semi-individual setting is more promising.

In this semi-individual setting, about 85% of households are treated with the fully individual schedules, and 15% remain under a household-based system. If we focus on married couples, about 60% of them are treated in a fully individual way. 6% of them still receive benefits as a household, and 34% of them were denied benefits because of the income of one spouse.

The effects of such an implementation seem encouraging: spendings are maintained at reasonable levels, and the labor supply response is the biggest of all scenarios, +1,4%. With a Cobb-Douglas $1-\alpha$ coefficient of $\frac{2}{3}$, this roughly yields a 0,9% increase in GDP. However, redistributive effects are strong: 90% of household at the bottom of income distribution are better off, and 0% at the very top (last 0,1%).

Finally, the efficiency gains are much stronger if we focus on households without children only. In this case (tables available upon request), they reach +3%, raising potential GDP gains to 2%. This emphasizes the need for future research as regards the ideal treatment of children.

7 Conclusion

This dissertation aims at being a methodological contribution that eases the way for future research.

Most of the work has been dedicated to building the simulator and describing the existing system and its features. However, the existing system is currently evolving: the last major reform, the implementation of RSA, only took place a few weeks before this dissertation was written. It might be worth seeing what experience can reveal about these reforms, which we will not be able to know before a few years, or at least a few months.

We hope that the simulator and its presentation could be useful to non-French speaking people who wanted to discover the French system, and that our presentation of its aggregated features in terms of average and marginal contribution rates could provide a clear overall sight to people who are actually part of the system as taxpayers or benefit receivers, and might have been confused by its complexity or its fragmented nature.

The third goal of this work, which is the use of the simulator in order to determine ideal reforms, supposes a broad normative reflexion that goes beyond the scope of this dissertation. Again, it should be stressed that the individualization scenarios are at an experimental state; we apologize for the somewhat raw way their are presented. We hope that this contribution will be of some use to this future research and debates, and that the findings presented here about the efficiency effects of individualization can constitute a first clue towards actual reforms in the future.

A Appendix

A.1 Summary statistics on our data

fractile	P_f	average income of the fractile	wages	replacement	pensions	non wage earners	capital income
		23 996	24 381	5 830	17 096	26 738	4 484
0-10	< 0	1 920	2 695	2 813	3 354	28 403	5 033
10-20	5 813	8 349	6 310	4 577	7 362	12 777	4 411
20-30	10 390	12 060	10 194	4 822	10 709	12 275	3 321
30-40	13 559	14 844	13 605	4 531	12 936	15 747	2 716
40-50	16 074	17 400	16 055	4 900	14 883	11 980	3 264
50-60	18 829	20 496	18 771	5 746	17 199	15 968	3 064
60-70	22 322	24 690	22 062	7 434	20 023	20 605	2 667
70-80	27 399	30 787	27 176	6 768	23 433	20 123	3 784
80-90	34 604	39 824	35 460	7 811	28 683	24 054	3 589
90-95	46 317	51 622	46 009	10 431	35 230	31 926	3 942
95-99	58 731	71 382	64 725	13 120	43 042	55 872	10 416
99+	98 331	152 097	132 853	20 023	35 514	107 084	19 422

Table 51: Average income, by fractile and type of income, in 2006 value (ERFS variables)

Note: in these computations, null values are excluded, which leads to the following reading: Among all households that have non wage-earning income, the average level of such income is 26 738€ These are ERFS aggregates, before any re-weighing of income distribution

fractile	P_f	wages	replacement	pensions	non wage-earners	capital income
All		**66%**	**13%**	**37%**	**6%**	**33%**
0-10	<0	35%	12%	21%	13%	17%
10-20	5 813	54%	24%	49%	6%	22%
20-30	10 390	58%	21%	46%	4%	23%
30-40	13 559	66%	14%	39%	3%	23%
40-50	16 074	68%	10%	38%	3%	25%
50-60	18 829	68%	9%	40%	5%	30%
60-70	22 322	68%	10%	41%	5%	36%
70-80	27 399	74%	13%	39%	6%	41%
80-90	34 604	79%	12%	34%	6%	47%
90-95	46 317	83%	10%	30%	7%	54%
95-99	58 731	87%	9%	23%	11%	68%
99+	98 331	91%	10%	17%	23%	82%

Table 52: Proportion of households who have each type of income. (ERFS variables)

Example : 82% of households of the last centile have non zero capital income; 66% of all households have non zero wages. These are ERFS data before re-weighing.

B The program: presentation

The program is available upon request. It is approximately 7 000 lines of SAS program, which corresponds to 200 pages. It comes with a small documentation. Here is the general structure:

(We only present programs that make the simulation. Programs that provide statistics are not included in the description below).

`income.sas` consolidates various measures from income using the fields of tax declarations. It also makes the conversion between net, taxable and gross labour income

`simple cases.sas` creates a simple table of households with "good properties" (no children, no special situations, no retirees, ...), and can be useful to simulate reforms on simple polar cases only. It is to be used instead of `income.sas`.

`income tax.sas` computes net taxable income, and income tax (*quotient familial*, *plafonnement du quotient familial*, *décote*), as well as marginal income tax rates and contrafactual income tax rates in the case of simple income tax individualization. It also computes family benefits, like Family Allocations and Family Quotient

`ppe.sas` computes PPE, PPE marginal rates and contrafactual PPE amounts.

`RSA.sas` computes RSA, and compounds all features of the system in terms of marginal and average implicit tax rates.

`scenarios.sas` simulates our new average tax rates schedules. For each schedules, it simulates both the fully individual implementation and the semi-individual implementation.

These programs need to be used in this precise order for the simulator to work.

There are other programs in the simulator, that study the effect of children, marriage penalty, or that extract official aggregates from impots.gouv PDF files. These can be used in any order.

C Methodological notes about the data

C.1 Computing income aggregates

In ERFS, names of variables are very close to the code names of standard tax declaration sheet fields. They are coded on 4 characters, of the form _nXX.

- _ is invariable, and is always _
- n is the number of the section on which the field is positioned on the tax declaration sheet
- XX is the codename of the field, written next to it.

For example, the variable “your salaries” is _1AJ, and the variable "your partner’s salaries" is _1BJ. Note that the two first characters can be dropped, since the combination XX already uniquely identifies every field.

Then, the way of aggregating these fields in order to obtain income aggregates is precisely described in the official section I.2, below. This document is in French. Non-French speakers can read the SAS program *income.sas* (available on the website), which does the same in a self-explanatory way.

C.2 Household head, spouses, first and second earners in the data

Methodological note about French income tax data: in the case of a couple, the head of the household (*personne de référence*) files the tax declaration, and reports his partner’s (*conjoint*) incomes. It should be stressed that *personne de référence* and *conjoint* are not synonyms for first earner and second earner: indeed, the head of the household (*personne de référence*) is necessarily the man, even if he earns less money than his partner. In rare cases, the first earner is neither the household head nor his partner, but a dependent. This means that the identification of first and second earners need to be done carefully, on a per-household basis.

Incidentally, this tradition of making the man the head of the household raises a problem identifying the gender of some individuals in the data: indeed, they were not designed to include same-sex couples, so only the gender of the household head is available; the *conjoint*

being always supposed to be a woman. ERFS data allow to overcome this problem, since they also contain precise information about individuals; but tax declaration data alone do not.

D Computing income tax, CSG, PPE, RSA

As regards income tax and CSG, there computation is already precisely described in the related sections. However, we felt the need to go over a few additional technicalities about PPE and RSA.

D.1 PPE: computing the coefficient of conversion

In section 1 of the tax declaration, every taxpayer has to fill additional information that allows the administration to compute her PPE benefits. The role of this coefficient is described in the body text, in section 4.3. This coefficient can not be found in the data. Hence, we here suggest a way to compute it. This computation can be useful in order to simulate, for instance, responses to variations in marginal tax rates : incomes increase, but in order to be precise, time-coefficients should be adapted too.

First, there is a dummy describing whether the individual is working full-time or not. This variable is `_1AX` for the head of the household, and `_1BX` for his partner. In couples, the head of the household is always the man. If this variable is set to 1, then the coefficient should be too.

Then, there are two measures of an individual's time quote : the number of hours worked within a year (`_1AV` for the household head, `_1BV` for the other), and the number of days worked (`_1NV` and `_1OV`). In principle, salary-earning workers should fill in their number of hours worked, and non salary-earning workers their number of days. There can be combinations, since people can have various occupations over one year.

Here, it should be noted that there can be mistakes with the data, so it is safer to add boundaries to the computation of the coefficient.

Hence, we compute the coefficient as follows, for each individual of the household (if

their "full time" variable is negative only):

$$C = \max(0, \min(1, \frac{Hours\ \ worked}{1800} + \frac{Days\ \ worked}{235}))$$

Note that there might still be “0” values. In that case, we change them to 1. (if these observations have no labor income attached, they will still not receive any PPE anyway; If they do, then it will be computed on the full-time equivalent formula).

Then, this coefficient can be used as described in section 4.3.2.

Note that when simulating a response in labor supply, this coefficient should be adapted, except when one has reason to believe that the response will be an augmentation in productivity and not in time worked. This is easily done, since the data contain the wage and non-wage income as well as the number of hours worked. This allows to compute an approximation of hourly salary, which allows in turn to know the number of additional hours worked and hence the variation in the coefficient. We replace aberrant values by the gross minimum wage rate, which was an hourly 8,71€ in 2008.

D.2 RSA deductions and the presence of capital income

In order to accurately simulate RSA benefits, it is necessary to gather as much data as possible about the household’s other sources of income. This is very important because of the of RSA, meant only to complement existing sources of income. Given the complexity of the social security system, there can be many. ERFS data allow us to do just that, since they contain information directly retrieved from government organs distributing such benefits. However, if one wants to stick to tax data (for instance, the tax files contained in ERFS data), one needs to compute revenue to be deducted. Apart from Family allocations and specific social benefits, capital income should be deducted from RSA benefits at a 100% rate. In order to compute capital income from the tax declarations, one needs to compute land revenues (*revenus fonciers*), by adding fields in section 4 of tax declaration sheets, to capital gains (*plus-values*section 3), and to asset revenues (*Revenus des capitaux mobiliers*, section 2). However, because of many exemptions, not all capital income appears in income tax data. As explained in section 2, we observe roughly 40% of total capital income. For simplicity,

we multiplied everyone's capital income by 2.54 (ratio between capital income reported by the French government (*Conseil des prélèvements obligatoires*) and capital income observed in the data). This might be a source of biases, so it is probably safer to use ERFS data on capital income (not in tax declarations) rather.

E Income tax individualization within the existing schedule

	AVERAGE RATES				TF	MARGINAL RATES		
	Income splitting		Individual tax			Income splitting		individual
fractile	without children	with children	without children	with children	variation in tax rates*	without children	with children	with or without
	8,53	**7,13**	**8,53**	**7,13**	***100,00%***	**23,12**	**15,24**	**17,47**
10-20	0,99	0,79	1,80	-7,08	*181,05%*	7,38	2,94	0,00
20-30	1,00	0,75	1,15	-2,29	*115,38%*	9,32	4,48	2,88
30-40	1,26	0,93	1,03	-1,64	*82,31%*	10,94	5,99	5,04
40-50	2,08	1,56	1,16	-1,19	*55,61%*	14,67	8,80	5,88
50-60	3,64	2,74	2,63	0,71	*72,09%*	16,79	9,75	12,60
60-70	4,94	3,79	4,60	3,13	*93,21%*	18,53	10,60	12,91
70-80	6,28	5,03	6,06	4,91	*96,43%*	20,75	12,27	13,60
80-90	8,03	6,57	7,69	6,76	*95,68%*	24,72	15,24	14,19
90-95	10,77	8,80	10,57	10,19	*98,18%*	29,25	18,83	28,22
95-99	15,14	12,51	16,29	16,65	*107,63%*	33,37	24,26	29,63
99+	26,38	24,21	28,23	28,94	*107,01%*	39,82	33,91	39,20
women								
	7,34	**5,98**	**6,55**	**4,24**	***89,29%***	**20,86**	**13,86**	**13,70**
10-20	1,35	1,08	2,44	-7,82	*181,17%*	9,64	3,95	0,00
20-30	1,42	1,06	1,65	-2,51	*116,42%*	10,70	5,10	2,67
30-40	1,77	1,31	1,52	-1,78	*86,10%*	12,21	6,76	4,85
40-50	2,56	1,88	1,62	-1,30	*63,23%*	15,49	9,19	5,83
50-60	4,15	3,02	2,94	0,42	*70,71%*	17,53	10,19	11,90
60-70	5,68	4,28	4,84	2,79	*85,13%*	19,28	11,50	12,25
70-80	7,22	5,77	6,37	4,63	*88,21%*	21,37	13,63	13,35
80-90	9,13	7,49	8,14	6,55	*89,21%*	24,39	16,76	14,16
90-95	12,43	10,05	11,00	9,78	*88,51%*	28,97	20,75	27,14
95-99	17,51	14,65	16,43	15,92	*93,83%*	34,00	26,96	29,17
99+	27,99	26,22	27,59	28,05	*98,56%*	39,58	35,35	38,79
men								
	9,31	**7,88**	**9,84**	**9,36**	***105,65%***	**24,61**	**16,15**	**19,95**
10-20	0,18	0,12	0,31	-5,38	*178,88%*	2,20	0,61	0,00
20-30	0,26	0,19	0,27	-1,90	*105,35%*	6,88	3,39	3,25
30-40	0,52	0,38	0,33	-1,45	*63,58%*	9,10	4,89	5,31
40-50	1,53	1,20	0,63	-1,06	*41,18%*	13,75	8,35	5,95
50-60	3,20	2,49	2,36	0,96	*73,64%*	16,15	9,37	13,21
60-70	4,39	3,42	4,43	3,39	*100,92%*	17,98	9,93	13,40
70-80	5,62	4,51	5,84	5,12	*103,92%*	20,31	11,31	13,77
80-90	7,32	5,97	7,39	6,89	*100,95%*	24,93	14,25	14,21
90-95	9,96	8,18	10,36	10,39	*104,08%*	29,38	17,90	28,75
95-99	14,41	11,85	16,25	16,87	*112,74%*	33,18	23,44	29,77
99+	26,11	23,87	28,34	29,10	*108,54%*	39,86	33,66	39,27

* in "without children" tax rates. Everything is expressed as a function of gross* **(but net of social security contributions)** income, as opposed to the rest of this paper.

This table reflects an experimental implementation of separate filing while keeping the existing income tax unchanged. However, we increase tax bracket's boundaries by 13% in order to maintain overall tax revenues unchanged, and we sreplace the existing child benefits (due to family income splitting) by a lump-sum tranfer of 610€ per child.

We can see that if we consider people without children, this experimental system could strongly reduce marginal tax rates, especially for women

F Additional tables and figures describing the current system

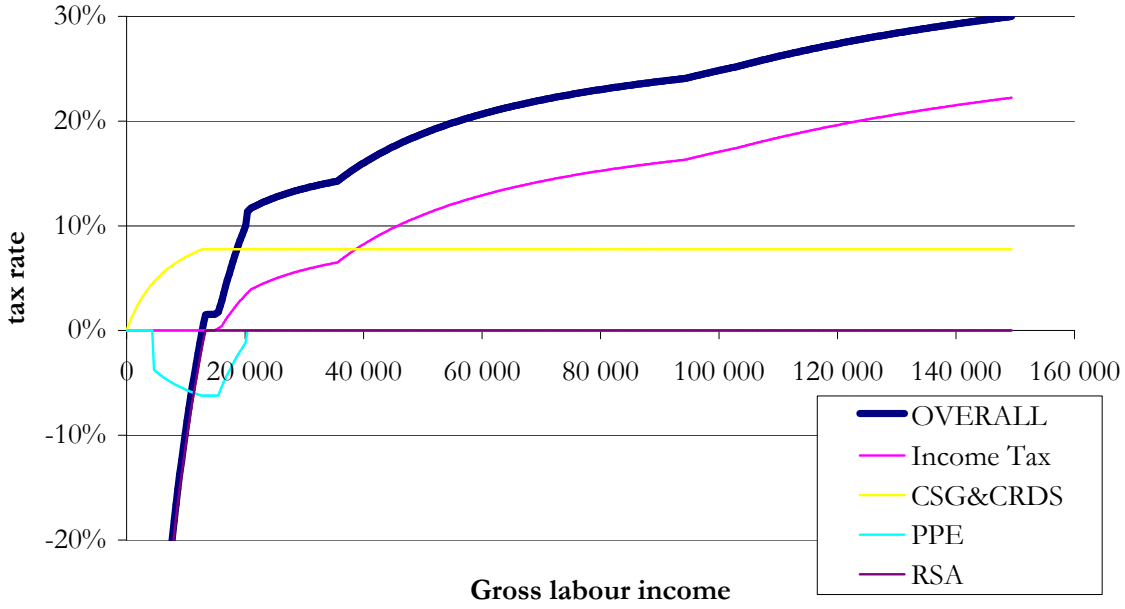

Figure 16: [Singles]Implicit and explicit tax rates as a function of gross labor income.

These curves are computed for single people (men or women), with no children, and whose income is 100% salary. For PPE computation, these people are assumed to work full time.

G Simulation of our third scenario: no children

We here simulate the third schedule in its two possible implementations, but focusing only on couples without children. This sheds light on the actual features of individualization, without the strong effects of the children-related reform.

Figure 17: [Couples]Implicit and explicit tax rates as a function of gross labor income.

These curves are computed for couples with no children, and whose income is 100% salary. For PPE computation, these people are assumed to work full time.

G.1 Third schedule with fully individual implementation

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
	337,26 Bn	**35,68 Bn**	**26,87 Bn**	**41,53 Bn**	**14,66 Bn**	**44,44 Bn**	**8,75 Bn**	**1,98 Bn**	**4,42 Bn**
0-10	1,85 Bn	-6,75 Bn	-9,98 Bn	-0,00 Bn	9,98 Bn	0,00 Bn	6,75 Bn	-0,07 Bn	-0,09 Bn
10-20	9,99 Bn	-1,78 Bn	-2,53 Bn	-0,00 Bn	2,53 Bn	0,02 Bn	1,80 Bn	-0,38 Bn	-0,63 Bn
20-30	14,30 Bn	0,14 Bn	-0,24 Bn	0,23 Bn	0,47 Bn	0,31 Bn	0,17 Bn	0,06 Bn	0,66 Bn
30-40	20,45 Bn	1,24 Bn	0,51 Bn	0,93 Bn	0,41 Bn	1,27 Bn	0,02 Bn	0,12 Bn	0,73 Bn
40-50	26,15 Bn	2,56 Bn	1,46 Bn	1,84 Bn	0,37 Bn	2,56 Bn	0,00 Bn	-0,07 Bn	-0,12 Bn
50-60	33,44 Bn	3,66 Bn	2,58 Bn	3,01 Bn	0,42 Bn	3,66 Bn	0,00 Bn	-0,11 Bn	-0,26 Bn
60-70	40,55 Bn	4,72 Bn	3,60 Bn	3,92 Bn	0,32 Bn	4,72 Bn	0,00 Bn	3,07 Bn	5,55 Bn
70-80	46,82 Bn	5,93 Bn	4,90 Bn	5,01 Bn	0,11 Bn	5,93 Bn	0,00 Bn	-0,21 Bn	-0,86 Bn
80-90	55,13 Bn	7,91 Bn	7,05 Bn	7,05 Bn	0,00 Bn	7,91 Bn	0,00 Bn	-0,16 Bn	-0,42 Bn
90-95	33,63 Bn	5,31 Bn	5,25 Bn	5,25 Bn	0,00 Bn	5,31 Bn	0,00 Bn	-0,06 Bn	-0,12 Bn
95-99	37,17 Bn	7,36 Bn	7,69 Bn	7,69 Bn	0,00 Bn	7,36 Bn	0,00 Bn	-0,01 Bn	0,17 Bn
99-99.9	13,34 Bn	3,65 Bn	4,17 Bn	4,17 Bn	0,00 Bn	3,65 Bn	0,00 Bn	-0,06 Bn	-0,02 Bn
99.9+	4,38 Bn	1,70 Bn	2,40 Bn	2,40 Bn	0,00 Bn.	1,70 Bn	0,00 Bn	-0,10 Bn	-0,13 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
	80%	**20%**	**75%**	**25%**	**89%**	**71%**	**27%**	**26%**
0-10	100%	0%	100%	0%	94%	95%	55%	36%
10-20	80%	20%	63%	37%	93%	93%	53%	35%
20-30	49%	51%	61%	39%	97%	36%	16%	28%
30-40	79%	21%	86%	14%	98%	16%	21%	31%
40-50	91%	9%	78%	22%	97%	82%	26%	22%
50-60	79%	21%	79%	21%	91%	52%	21%	19%
60-70	80%	20%	73%	27%	89%	91%	21%	22%
70-80	80%	20%	72%	28%	84%	57%	24%	26%
80-90	84%	16%	77%	23%	67%	83%	26%	22%
90-95	71%	29%	57%	43%	58%	90%	28%	24%
95-99	44%	56%	53%	47%	89%	85%	35%	32%
99-99.9	11%	89%	13%	87%	80%	99%	47%	37%
99.9+	1%	99%	0%	100%	81%	100%	69%	41%

Table 53: No children: Impact of reform with fully individual implementation, on fractiles of households

G.1.1 Redistributive and marginal tax rate effects: individuals

gender	Fracti-le	Fractile lower limit	gross income	current overall taxes	new total taxes	better off	worse off
All			**22 625**	**2 394**	**1 803**	**75.0%**	**25.0%**
All	0-20	0.00	1 720	-2 577	-5 206	98.9%	1.1%
All	20-30	7156.57	10 131	-479	-968	69.5%	30.5%
All	30-40	12827.12	15 081	733	400	68.6%	31.4%
All	40-50	17098.93	18 746	1 534	1 061	83.7%	16.3%
All	50-60	20279.33	21 876	2 331	1 808	83.5%	16.5%
All	60-70	23514.44	25 305	2 915	2 621	72.7%	27.3%
All	70-80	27211.89	29 583	3 671	3 423	70.9%	29.1%
All	80-90	32310.71	36 392	5 010	4 912	61.4%	38.6%
All	90-95	41723.34	46 577	7 427	7 608	52.2%	47.8%
All	95-99	53047.38	67 172	12 963	14 373	36.4%	63.6%
All	99-99.9	96547.33	127 714	33 211	39 242	9.4%	90.6%
All	99.9+	223738.57	401 337	148 129	208 418	0.2%	99.8%
Women			**18 754**	**1 685**	**587**	**81.4%**	**18.6%**
Women	0-20	0.00	1 530	-2 107	-5 219	98.7%	1.3%
Women	20-30	7156.57	10 128	-284	-954	73.1%	26.9%
Women	30-40	12827.12	15 084	868	400	74.5%	25.5%
Women	40-50	17098.93	18 726	1 611	1 056	84.9%	15.1%
Women	50-60	20279.33	21 817	2 387	1 792	88.0%	12.0%
Women	60-70	23514.44	25 273	3 012	2 615	76.7%	23.3%
Women	70-80	27211.89	29 594	3 799	3 425	74.6%	25.4%
Women	80-90	32310.71	36 382	5 188	4 909	68.6%	31.4%
Women	90-95	41723.34	46 486	7 728	7 581	62.5%	37.5%
Women	95-99	53047.38	65 382	13 293	13 759	53.8%	46.2%
Women	99-99.9	96547.33	124 822	34 094	37 919	16.1%	83.9%
Women	99.9+	223738.57	402 925	154 281	209 471	0.3%	99.7%
Men			**25 952**	**3 003**	**2 848**	**69.4%**	**30.6%**

Table 54: No children: Impact of reform with fully individual implementation, on individuals

Fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**33.3%**	**66.7%**	**297**	**70.7%**	**29.3%**	**25.7%**	**27.3%**
0-20	9.8%	90.2%	23	98.8%	1.2%	36.2%	53.0%
20-30	27.4%	72.6%	2 989	57.4%	42.6%	35.2%	42.1%
30-40	74.6%	25.4%	465	72.1%	27.9%	27.0%	15.4%
40-50	72.2%	27.8%	426	85.4%	14.6%	30.0%	21.4%
50-60	7.4%	92.6%	-432	64.3%	35.7%	20.8%	26.6%
60-70	61.3%	38.7%	17	73.8%	26.2%	20.3%	19.0%
70-80	11.0%	89.0%	-43	67.6%	32.4%	19.6%	19.8%
80-90	35.6%	64.4%	14	51.2%	48.8%	22.6%	23.7%
90-95	42.7%	57.3%	-153	52.6%	47.4%	26.3%	29.4%
95-99	4.6%	95.4%	-511	27.3%	72.7%	29.4%	34.8%
99-99.9	2.3%	97.7%	-1 247	7.3%	92.7%	37.1%	45.9%
99.9+	0.0%	100.0%	-12 735	0.1%	99.9%	40.5%	68.3%
Women	**34.6%**	**65.4%**	**642**	**72.2%**	**27.8%**	**25.0%**	**25.8%**
0-20	11.4%	88.6%	38	98.4%	1.6%	37.5%	52.7%
20-30	30.5%	69.5%	5 587	50.5%	49.5%	37.0%	41.6%
30-40	77.3%	22.7%	905	81.4%	18.6%	26.7%	15.4%
40-50	64.8%	35.2%	904	88.5%	11.5%	26.9%	21.4%
50-60	5.4%	94.6%	-1 021	42.7%	57.3%	18.7%	26.5%
60-70	65.0%	35.0%	43	79.7%	20.3%	19.1%	19.1%
70-80	13.6%	86.4%	-108	66.4%	33.6%	19.1%	19.8%
80-90	42.1%	57.9%	36	43.1%	56.9%	23.4%	23.7%
90-95	51.0%	49.0%	-458	63.5%	36.5%	27.6%	29.3%
95-99	7.2%	92.8%	-1 934	19.2%	80.8%	30.3%	34.6%
99-99.9	4.0%	96.0%	-7 047	4.2%	95.8%	38.7%	45.7%
99.9+	0.0%	100.0%	-94 525	0.0%	100.0%	40.7%	68.5%
Men	**32.1%**	**67.9%**	**0**	**69.4%**	**30.6%**	**26.2%**	**28.2%**

Table 55: Impact of reform with fully individual implementation, on individuals (continued)

G.1.2 Summary and labor supply response

fracti-le	Fractile lower limit	Husband's gross income	Woman's labour supply reaction	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
	27 169	**16 352**	**1 721**	**64%**	**36%**	**26%**	**25%**
0-10	0	10 743	-138	78%	22%	29%	25%
10-20	7 588	11 878	388	81%	19%	27%	22%
20-30	15 244	14 162	19 174	62%	38%	25%	28%
30-40	19 792	15 323	-913	66%	34%	24%	26%
40-50	23 258	15 763	-1 858	70%	30%	24%	24%
50-60	26 374	17 060	-758	71%	29%	24%	22%
60-70	29 814	17 388	-303	72%	28%	24%	21%
70-80	34 439	19 041	-181	65%	35%	25%	23%
80-90	41 520	20 613	395	45%	55%	26%	27%
90-95	55 821	21 184	1 062	32%	68%	27%	31%
95-99	74 751	21 159	1 424	36%	64%	30%	34%
99-99.9	138 074	23 860	3 232	28%	72%	34%	40%
99.9+	339 926	33 941	1 244	22%	78%	49%	41%

Table 56: No children: Labor supply responses of married women, ranked by their husband's income, in the fully individual system

G.2 Third scenario with semi-individual implementation

G.2.1 Redistributive and marginal tax rate effects: households

fractile	gross income	current total taxes	new total taxes	new tax revenue	new spendings	current tax revenue	current spendings	fiscal gain	labour supply response
	337,26 Bn	**35,68 Bn**	**32,48 Bn**	**43,82 Bn**	**11,34 Bn**	**44,44 Bn**	**8,75 Bn**	**1,38 Bn**	**9,83 Bn**
0-10	1,85 Bn	-6,75 Bn	-9,37 Bn	-0,00 Bn	9,37 Bn	0,00 Bn	6,75 Bn	-0,07 Bn	-0,08 Bn
10-20	9,99 Bn	-1,78 Bn	-1,97 Bn	-0,00 Bn	1,97 Bn	0,02 Bn	1,80 Bn	-0,38 Bn	-0,63 Bn
20-30	14,30 Bn	0,14 Bn	0,24 Bn	0,24 Bn	0,00 Bn	0,31 Bn	0,17 Bn	0,06 Bn	0,87 Bn
30-40	20,45 Bn	1,24 Bn	0,97 Bn	0,97 Bn	0,00 Bn	1,27 Bn	0,02 Bn	0,13 Bn	0,89 Bn
40-50	26,15 Bn	2,56 Bn	1,94 Bn	1,94 Bn	0,00 Bn	2,56 Bn	0,00 Bn	-0,05 Bn	0,00 Bn
50-60	33,44 Bn	3,66 Bn	3,27 Bn	3,27 Bn	0,00 Bn	3,66 Bn	0,00 Bn	-0,05 Bn	-0,21 Bn
60-70	40,55 Bn	4,72 Bn	4,40 Bn	4,40 Bn	0,00 Bn	4,72 Bn	0,00 Bn	2,22 Bn	10,22 Bn
70-80	46,82 Bn	5,93 Bn	5,56 Bn	5,56 Bn	0,00 Bn	5,93 Bn	0,00 Bn	-0,12 Bn	-0,76 Bn
80-90	55,13 Bn	7,91 Bn	7,49 Bn	7,49 Bn	0,00 Bn	7,91 Bn	0,00 Bn	-0,12 Bn	-0,36 Bn
90-95	33,63 Bn	5,31 Bn	5,43 Bn	5,43 Bn	0,00 Bn	5,31 Bn	0,00 Bn	-0,05 Bn	-0,13 Bn
95-99	37,17 Bn	7,36 Bn	7,86 Bn	7,86 Bn	0,00 Bn	7,36 Bn	0,00 Bn	-0,01 Bn	0,18 Bn
99-99.9	13,34 Bn	3,65 Bn	4,20 Bn	4,20 Bn	0,00 Bn	3,65 Bn	0,00 Bn	-0,06 Bn	-0,02 Bn
990,00 Bn9+	4,38 Bn	1,70 Bn	2,40 Bn	2,40 Bn	0,00 Bn	1,70 Bn	0,00 Bn	-0,10 Bn	-0,13 Bn

fractile	households better off	households worse off	better off (with response)	worse off (with response)	decreased marginal tax rates	increased marginal tax rates	new marginal tax rate	current marginal tax rate
	73%	**27%**	**69%**	**31%**	**89%**	**69%**	**27%**	**26%**
0-10	94%	6%	94%	6%	94%	95%	55%	36%
10-20	73%	27%	55%	45%	93%	93%	53%	35%
20-30	42%	58%	55%	45%	97%	31%	16%	28%
30-40	73%	27%	81%	19%	98%	11%	20%	31%
40-50	87%	13%	73%	27%	97%	78%	25%	22%
50-60	73%	27%	71%	29%	91%	51%	20%	19%
60-70	71%	29%	63%	37%	89%	89%	20%	22%
70-80	72%	28%	64%	36%	84%	55%	23%	26%
80-90	77%	23%	70%	30%	67%	83%	26%	22%
90-95	66%	34%	52%	48%	58%	90%	28%	24%
95-99	40%	60%	50%	50%	89%	85%	35%	32%
99-99.9	11%	89%	13%	87%	80%	99%	47%	37%
99.9+	1%	99%	0%	100%	81%	100%	69%	41%

Table 57: No children: Impact of reform with semi-individual implementation, on fractiles of households

G.2.2 Redistributive and marginal tax rate effects: individuals

gender	Fractile	Fractile lower limit	gross income	current overall taxes	new total taxes	better off	worse off
All			**22 625**	**2 394**	**2 179**	**70.1%**	**29.9%**
All	0-20	0.00	1 720	-2 577	-3 432	75.1%	24.9%
All	20-30	7156.57	10 131	-479	-609	60.9%	39.1%
All	30-40	12827.12	15 081	733	395	68.7%	31.3%
All	40-50	17098.93	18 746	1 534	1 050	84.2%	15.8%
All	50-60	20279.33	21 876	2 331	1 791	85.6%	14.4%
All	60-70	23514.44	25 305	2 915	2 601	74.3%	25.7%
All	70-80	27211.89	29 583	3 671	3 399	72.7%	27.3%
All	80-90	32310.71	36 392	5 010	4 886	63.1%	36.9%
All	90-95	41723.34	46 577	7 427	7 575	52.8%	47.2%
All	95-99	53047.38	67 172	12 963	14 334	36.4%	63.6%
All	99-99.9	96547.33	127 714	33 211	39 200	9.4%	90.6%
All	99.9+	223738.57	401 337	148 129	208 366	0.2%	99.8%
Women			**18 754**	**1 685**	**1 276**	**73.2%**	**26.8%**
Women	0-20	0.00	1 530	-2 107	-2 750	70.0%	30.0%
Women	20-30	7156.57	10 128	-284	-464	63.6%	36.4%
Women	30-40	12827.12	15 084	868	397	74.5%	25.5%
Women	40-50	17098.93	18 726	1 611	1 052	85.0%	15.0%
Women	50-60	20279.33	21 817	2 387	1 784	88.9%	11.1%
Women	60-70	23514.44	25 273	3 012	2 609	77.3%	22.7%
Women	70-80	27211.89	29 594	3 799	3 418	75.2%	24.8%
Women	80-90	32310.71	36 382	5 188	4 903	69.1%	30.9%
Women	90-95	41723.34	46 486	7 728	7 571	62.7%	37.3%
Women	95-99	53047.38	65 382	13 293	13 745	53.8%	46.2%
Women	99-99.9	96547.33	124 822	34 094	37 906	16.1%	83.9%
Women	99.9+	223738.57	402 925	154 281	209 454	0.3%	99.7%
Men			**25 952**	**3 003**	**2 955**	**67.5%**	**32.5%**

Table 58: No children: Impact of reform with semi individual implementation, on individuals

Fractile	decreased marginal tax rates	increased marginal tax rates	labor supply response	better off (with response)	worse off (with response)	current marginal tax rate	new marginal tax rate
All	**34.7%**	**65.3%**	**660**	**65.9%**	**34.1%**	**25.7%**	**27.0%**
0-20	16.3%	83.7%	265	76.0%	24.0%	36.2%	47.2%
20-30	29.4%	70.6%	6 132	47.1%	52.9%	35.2%	37.7%
30-40	74.6%	25.4%	465	72.3%	27.7%	27.0%	15.4%
40-50	72.2%	27.8%	426	85.9%	14.1%	30.0%	21.4%
50-60	7.4%	92.6%	-432	66.1%	33.9%	20.8%	26.6%
60-70	61.3%	38.7%	17	75.3%	24.7%	20.3%	19.0%
70-80	11.0%	89.0%	-43	69.2%	30.8%	19.6%	19.8%
80-90	35.6%	64.4%	14	52.7%	47.3%	22.6%	23.7%
90-95	42.7%	57.3%	-153	53.1%	46.9%	26.3%	29.4%
95-99	4.6%	95.4%	-511	27.3%	72.7%	29.4%	34.8%
99-99.9	2.3%	97.7%	-1 247	7.3%	92.7%	37.1%	45.9%
99.9+	0.0%	100.0%	-12 735	0.1%	99.9%	40.5%	68.3%
Women	**37.3%**	**62.7%**	**1 428**	**63.9%**	**36.1%**	**25.0%**	**25.2%**
0-20	20.6%	79.4%	445	71.4%	28.6%	37.5%	43.5%
20-30	33.7%	66.3%	11 462	37.9%	62.1%	37.0%	34.7%
30-40	77.3%	22.7%	905	81.5%	18.5%	26.7%	15.4%
40-50	64.8%	35.2%	904	88.7%	11.3%	26.9%	21.4%
50-60	5.4%	94.6%	-1 021	42.9%	57.1%	18.7%	26.5%
60-70	65.0%	35.0%	43	79.9%	20.1%	19.1%	19.1%
70-80	13.6%	86.4%	-108	66.7%	33.3%	19.1%	19.8%
80-90	42.1%	57.9%	36	43.1%	56.9%	23.4%	23.7%
90-95	51.0%	49.0%	-458	63.5%	36.5%	27.6%	29.3%
95-99	7.2%	92.8%	-1 934	19.2%	80.8%	30.3%	34.6%
99-99.9	4.0%	96.0%	-7 047	4.2%	95.8%	38.7%	45.7%
99.9+	0.0%	100.0%	-94 525	0.0%	100.0%	40.7%	68.5%
Men	**32.6%**	**67.4%**	**0**	**67.5%**	**32.5%**	**26.2%**	**28.1%**

Table 59: No children: Impact of reform with semi individual implementation, on individuals (continued)

G.2.3 Summary and labor supply responses

fractile	Fractile lower limit	Husband's gross income	Woman's labour supply reaction	increased marginal tax rates	decreased marginal tax rates	new marginal tax rate	current marginal tax rate
		16 352	**3 678**	**58%**	**42%**	**24%**	**25%**
0-10	0	10 743	-116	78%	22%	29%	25%
10-20	7 588	11 878	1 013	65%	35%	24%	22%
20-30	15 244	14 162	36 575	36%	64%	21%	28%
30-40	19 792	15 323	-79	54%	46%	22%	26%
40-50	23 258	15 763	-1 721	66%	34%	22%	24%
50-60	26 374	17 060	-735	68%	32%	22%	22%
60-70	29 814	17 388	-54	65%	35%	22%	21%
70-80	34 439	19 041	18	64%	36%	23%	23%
80-90	41 520	20 613	500	45%	55%	25%	27%
90-95	55 821	21 184	982	32%	68%	26%	31%
95-99	74 751	21 159	1 477	36%	64%	29%	34%
99-99.9	138 074	23 860	3 193	29%	71%	34%	40%
99.9+	339 926	33 941	1 555	22%	78%	49%	41%

Table 60: No children: Labor supply responses of married women, ranked by their husband's income, in the semi-individual system

H The concept of average marginal rate

In order to compute an average marginal rate ($\bar{MR}$), for all individuals or households as well as within each fractile, we first compute everyone's individual marginal tax rate:

$$\frac{\partial T(Y)}{\partial Y} \simeq \frac{T(Y+100) - T(Y)}{100}$$

Then, we weight every individual (or household) marginal tax rate by its labor income:

$$\bar{MR} = \sum_{i \in I} P_i Y_i \cdot \frac{\partial T(Y)}{\partial Y}$$

for any subset I of the individuals in the panel. In our study, I is most of the time the whole population or fractiles, computed on various concepts of income. In ERFS 06 data, P_i is the variable WPRM.

This weighing makes sense because it makes us able to easily find the amount of tax actually levied by the state for any infinitesimal variation of everyone's income.

I Official income tax documentation

I.1 Examples of tax files

- Tax form 2042: this is the most common tax file. Every taxpayer has to file it. It addresses the most common sources of income. This form available on http://www.impots.gouv.fr, or upon request. The number inside each field represents the aggregate amount of income declared in the field in 2006. This is an official document of the French tax administration, also available on the website http://www.impots.gouv.fr.

- Tax form 2042c: this form can be added to the 2042 form, and addresses more complex cases, like income sources of farmers, very small businesses or non wage-earning workers.

I.2 Notices

2009 income tax notice: these sheets are sent to every taxpayer along with the income tax file to complete. They contain all information one needs to directly compute her income tax. They can also be downloaded from http://www.impots.gouv.fr. We do not provide direct links to these documents here, since their URLs are subject to change.

References

[1] Alberto F. Alesina, Andrea Ichino, and Loukas Karabarbounis. Gender Based Taxation and the Division of Family Chores. *SSRN eLibrary*, 2007.

[2] James Alm and Mikhail I. Melnik. Taxing the "family" in the individual income tax. *Andrew Young School of Policy Studies*, 2004/07.

[3] Patricia F. Apps and Ray Rees. Individual versus joint taxation in models with household production. *Journal of Political Economy*, 107(2):393–403, April 1999.

[4] Patricia F. Apps and Ray Rees. Taxation of Couples. *SSRN eLibrary*, 2007.

[5] Michael J. Boskin and Eytan Sheshinski. Optimal tax treatment of the family: Married couples. NBER Working Papers 0368, National Bureau of Economic Research, Inc, March 1984.

[6] Clément Carbonnier. L'impact de la fiscalité sur la participation des conjoints au marché du travail. *Documents de travail de la DGTPE*, 2007/05.

[7] Damien Échevin. L'individualisation de l'impôt sur le revenu : équitable ou pas ? *Economie & prévision*, 160-161(4):149–165, 2003.

[8] Nada Eissa. Taxation and labor supply of married women: the tax reform act of 1986 as a natural experiment. *NBER WP 5023*, 1995.

[9] Daniel R. Feenberg and Harvey S. Rosen. Alternative tax treatments of the family: Simulation methodology and results. NBER Working Papers 0497, National Bureau of Economic Research, Inc, July 1980.

[10] Jon Gruber and Emmanuel Saez. The elasticity of taxable income: Evidence and implications. Working Paper 7512, National Bureau of Economic Research, January 2000.

[11] Henrik Jacobsen Kleven, Claus Thustrup Kreiner, and Emmanuel Saez. The optimal income taxation of couples as a multi-dimensional screening problem. CESifo Working Paper Series CESifo Working Paper No., CESifo GmbH, 2007.

[12] Camille Landais. *Les hauts revenus en France(1998-2006) : Une explosion des inégalités ?* PhD thesis, Paris School of Economics, 2007/06.

[13] Thomas Piketty. L'impact des incitations financières au travail sur les comportements individuels: une estimation pour le cas français. *Économie et Prévision*, 1997.

[14] Thomas Piketty. *Les hauts revenus en France au XXe siècle. Inégalités et redistribution.* Grasset, 2001.

[15] Harvey S. Rosen. Tax illusion and the labor supply of married women. *The Review of Economics and Statistics*, 58(2):167–172, 1976.

[16] Emmanuel Saez. Using elasticities to derive optimal income tax rates. NBER Working Papers 7628, National Bureau of Economic Research, Inc, March 2000.

[17] Emmanuel Saez, Joel B. Slemrod, and Seth H. Giertz. The elasticity of taxable income with respect to marginal tax rates: A critical review. Working Paper 15012, National Bureau of Economic Research, May 2009.

List of Figures

List of Tables

J Example of 2042 Tax form, filled with the 2006 aggregates

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

DÉCLARATION DES REVENUS 2006

N° 2042
cerfa
N° 10330 * 11
DGI

FRANCE ENTIERE
"MONTANTS"
Somme des éléments déclarés par l'ensemble des déclarants
(en euros sauf mention contraire)

Facilitez-vous l'impôt,
www.impots.gouv.fr

ADRESSE AU 1ER JANVIER 2007 (Pour le calcul correct de votre taxe d'habitation)

Appt. ☐ Étage ☐ Esc. ☐ Bâtiment ☐ Nbre de pièces ☐ N° et Rue

Résidence ☐ Code postal ☐ Commune

À ce domicile, vous êtes propriétaire ☐ locataire ☐ occupant à titre gratuit ☐ Nom du propriétaire

ÉTAT CIVIL DU OU DES DÉCLARANTS (Écrivez en lettres majuscules)

	Vous	Conjoint *
	Monsieur ☐ Madame ☐ Mademoiselle ☐	Monsieur ☐ Madame ☐ Mademoiselle ☐
◂ Nom ▸		
◂ Nom de naissance ▸		
◂ Prénoms ▸		
◂ Date de naissance ▸		
◂ Lieu de naissance ▸		

Les informations figurant dans la déclaration sont conformes aux règles du secret statistique. Lorsqu'une donnée concerne moins de 11 contribuables ou lorsque pour celle-ci un élément dominant représente plus de 85% du montant agrégé, l'information n'est communiquée ni en nombre, ni en montant.

• Si vous déposez une déclaration pour la première fois, cochez la case : ☐

Sinon, indiquez votre n° FIP : ☐ et votre n° fiscal : ☐

le n° fiscal de votre conjoint : ☐

Vous trouverez ces numéros sur votre déclaration de revenus ou votre avis d'imposition de l'année dernière. Leur indication facilitera le rapprochement des acomptes ou mensualités que vous avez déjà payés et de l'impôt dû.

• Pour les couples mariés : Madame, si vous souhaitez voir figurer votre nom de naissance sur nos courriers, veuillez cocher la case : ☐

* ou partenaire du Pacs

REDEVANCE AUDIOVISUELLE

Cochez la case, si aucune de vos résidences (principale ou secondaire) n'est équipée d'un téléviseur (*voir notice*) . ☐ Ø RA

CHANGEMENTS D'ADRESSE

En cas de changement d'adresse en 2006 ou en 2007, merci de compléter les informations ci-dessous :

Si vous avez déménagé en 2006, indiquez votre adresse au 1er janvier 2006

N° et Rue ☐ Bâtiment ☐ Appt. ☐

Code postal ☐ Commune ☐

Si vous avez déménagé après le 1er janvier 2007, indiquez votre adresse actuelle (*pour recevoir sans difficulté votre courrier*)

N° et Rue ☐ Bâtiment ☐ Appt. ☐

Code postal ☐ Commune ☐

SIGNATURE DU OU DES DÉCLARANTS

À ..... le 2007

Votre n° de téléphone ☐
Votre adresse internet ☐

Si vous déposez également une déclaration n° 2042 complémentaire, cochez la case ☐

Pour payer vos impôts en toute tranquillité, choisissez le prélèvement automatique.
Connectez-vous sur www.impots.gouv.fr ou contactez votre trésorerie.

Services gestionnaires ☐ Situation et charges du foyer fiscal ☐ Éléments pour la taxe d'habitation ☐

2042 – IMPRIMERIE NATIONALE 2007 01116133 PO – Avril 2007 – 6 0100731

N'oubliez pas de remplir le cadre A.
- Si vous élevez seul(e) votre ou vos enfants : complétez le cadre B ;
- Si vous avez des personnes à charge (autres que les enfants rattachés) : complétez le cadre C ;
- Si un ou plusieurs de vos enfants majeurs ou mariés demandent leur rattachement : complétez le cadre D.

A | Situation du foyer fiscal en 2006

. Mariés . Célibataire . Divorce/séparation
. Veuvage . Pacs

En cas de changement en 2006
- Date du mariage ou du PACS X / / 2006
- Date du divorce/séparation/ rupture du PACS Y / / 2006
- Date du décès Z / / 2006

Vous devez souscrire une déclaration pour chacune des périodes avant et après votre changement de situation de famille (*voir notice*).

Situations particulières

Situation des enfants en cas de célibat, divorce, séparation ou veuvage

. Vous vivez seul(e) et vous avez eu un enfant décédé après l'âge de 16 ans ou par suite de faits de guerre (Complétez aussi la ligne H).

. Vous vivez seul(e) et vos enfants (majeurs ou mariés ; mineurs imposés en leur nom propre) ne sont pas comptés à votre charge ou n'ont pas demandé leur rattachement à votre foyer (Complétez aussi la ligne H).

Année de naissance de votre enfant dernier-né, ouvrant droit à l'attribution d'une demi-part supplémentaire.

. Vous ne vivez pas seul(e).

. Un au moins de vos enfants à charge ou rattaché est issu du mariage avec votre conjoint* décédé.

Situations donnant droit à une demi-part supplémentaire

Titulaire d'une pension (militaire, accident du travail) pour une invalidité d'au moins 40 % ou d'une carte d'invalidité d'au moins 80 % (joignez une copie de la carte) :

. Vous remplissez ces conditions.

. Votre conjoint* remplit ces conditions, ou votre conjoint*, décédé en 2006, remplissait ces conditions.

Titulaire de la carte du combattant ou d'une pension militaire d'invalidité ou de victime de guerre :

. Vous êtes célibataire, divorcé, séparé, veuf**et :
- vous avez plus de 75 ans et remplissez ces conditions ;
- vous avez plus de 75 ans et votre conjoint*, décédé, remplissait ces conditions ;
- votre conjoint*, âgé de plus de 75 ans, décédé en 2006, remplissait ces conditions.

. Vous êtes mariés ou liés par un PACS et l'un des deux déclarants, âgé de plus de 75 ans, remplit ces conditions.

. Vous avez une pension de veuve de guerre.

B | Parent isolé

Vous êtes célibataire, divorcé(e), séparé(e), veuf(ve)** **et vous vivez seul(e)** avec votre (ou vos) enfant(s) ou des personnes invalides recueillies sous votre toit ; pour bénéficier de la majoration du nombre de parts et éventuellement de la majoration de la prime pour l'emploi, cochez la case :

T .

C | Personnes à charge en 2006 (*voir notice*)

Précisez ci-dessous TOUTES LES PERSONNES À VOTRE CHARGE autres que les enfants qui demandent leur rattachement, en indiquant pour chacune son année de naissance. (Ne comptez pas les enfants qui souscrivent une déclaration séparée ou qui sont déclarés à charge par une autre personne). Indiquez leurs nom et prénom ci-dessous. Si vous n'avez plus de personne à charge, portez « 0 » dans la ou les cases F à R.

Indiquez les enfants en résidence alternée sur la déclaration n° 2042 C.

Enfant(s) non marié(s) de moins de 18 ans au 01-01-2006 ou né(s) en 2006 ou handicapé(s) quel que soit l'âge : Nombre : F 15 990 579

Année de naissance :

Dont enfant(s) titulaire(s) de la carte d'invalidité : Nombre : G 230 721

Année de naissance :

Personne(s) vivant sous votre toit et titulaire(s) de la carte d'invalidité d'au moins 80 % : Nombre : R 32 877

Année de naissance :

Précisez ci-dessous les noms et prénoms de vos enfants ou autres personnes à charge :

D | Rattachement d'enfants majeurs ou mariés en 2006

Nombre d'enfant(s) célibataire(s) (ou veufs ou divorcés) majeurs sans enfant : J 1 891 215

Nombre d'enfants mariés ou non mariés chargés de famille : (y compris le conjoint et les enfants) N 9 533

M/Mme/Mlle | Nom/Nom de naissance si différent | Prénoms

Date de naissance | Dépt. | Commune/Pays

M/Mme/Mlle | Nom/Nom de naissance si différent | Prénoms

Date de naissance | Dépt. | Commune/Pays

M/Mme/Mlle | Nom/Nom de naissance si différent | Prénoms

Date de naissance | Dépt. | Commune/Pays

ET LA TÉLÉDÉCLARATION ?

Désormais, vous pouvez télédéclarer en cas de changement de situation de famille sur www.impots.gouv.fr

- si vous vous êtes marié, « pacsé » ou si vous avez divorcé en 2006 ;
- si vous êtes âgé de plus de 22 ans et si vous étiez rattaché l'année dernière à la déclaration de revenus de vos parents.

** Ou partenaire du PACS.*
*** Ou votre partenaire lié par un PACS est décédé.*

1 | Traitements, salaires

		Vous		Conjoint*		Personne 1		Personne 2		Personne 3
Total de vos revenus d'activité	AJ	423 870 470 559	BJ	102 274 769 850	CJ	1 561 956 237	DJ	179 331 833	EJ	15 991 963
Total de vos autres revenus imposables	AP	21 867 430 516	BP	5 324 607 698	CP	50 002 465	DP	5 700 276	EP	595 347
Frais réels (liste détaillée sur papier libre)	AK	18 656 790 376	BK	4 836 391 589	CK	46 159 036	DK	3 953 212	EK	276 537
Demandeur d'emploi de plus d'un an	AI	.	BI	.	CI	.	DI	.	EI	.
Déménagement de plus de 200 km pour trouver un emploi exercé pendant au moins 6 mois (*voir notice*)	AR	.	BR	.	CR	.	DR	.	ER	

Prime pour l'emploi (*pour obtenir votre prime par virement, joignez un RIB, un RIP ou un RICE*)

		Vous		Conjoint*		Personne 1		Personne 2		Personne 3
Travail à temps plein en 2006 : cochez la case	AX	.	BX	.	CX	.	DX	.	QX	.
Sinon indiquez le nombre d'heures (H) payées dans l'année	AV	3 879 247 240	BV	1 737 634 265	CV	110 262 424	DV	12 515 896	QV	1 009 397

Pensions, retraites, rentes y compris pensions alimentaires perçues

		Vous		Conjoint*		Personne 1		Personne 2		Personne 3
Total de vos pensions, retraites, rentes	AS	174 352 290 434	BS	31 285 013 896	CS	164 192 281	DS	35 426 338	ES	7 409 257
Pensions alimentaires perçues	AO	4 541 532 363	BO	285 889 418	CO	399 518 783	DO	147 409 088	EO	16 407 074

Rentes viagères à titre onéreux

		Moins de 50 ans		De 50 ans à 59 ans		De 60 ans à 69 ans		À partir de 70 ans
Âge d'entrée en jouissance								
Total des rentes perçues par le foyer pour chaque âge d'entrée en jouissance	AW	32 374 914	BW	128 618 633	CW	546 972 872	DW	436 733 067

2 | Revenus des valeurs et capitaux mobiliers

Produits de placement soumis aux prélèvements libératoires autres que ceux indiqués ligne DH	EE	4 578 797 216
• Revenus ouvrant droit à abattement (ne les déduisez pas)		
Revenus des actions et parts (crédit d'impôt inclus)	DC	15 218 817 621
Revenus imposables des actions et parts non cotées détenues dans un PEA	FU	44 407 161
Revenus distribués dans le PEA pour le calcul du crédit d'impôt de 50 %	GR	1 492 973 322
Produits des contrats d'assurance-vie et de capitalisation d'une durée au moins égale à 6 ou 8 ans	CH	338 763 065
• Revenus n'ouvrant pas droit à abattement		
Revenus de valeurs mobilières et distributions (crédit d'impôt inclus)	TS	1 251 489 423
Revenus des structures soumises hors de France à un régime fiscal privilégié et autres revenus distribués	GO	11 478 098
Autres revenus (crédit d'impôt inclus)	TR	2 090 858 463
• Autres		
Revenus des lignes DC, CH, TS, TR pour lesquels les prélèvements sociaux ont déjà été appliqués	CG	417 815 424
Montant des frais venant en déduction	CA	223 203 183
Montant total des crédits d'impôt	AB	65 180 170
Total des crédits d'impôt directive « épargne » (report de la déclaration n° 2047)	BG	1 757 541
Produits d'assurance-vie et de capitalisation soumis au prélèvement libératoire de 7,5 %	DH	310 568 996

3 | Plus values et gains taxables à 16 %

Gains sur cessions de valeurs mobilières, de droits sociaux et assimilés taxables à 16 %	VG	14 306 036 550
Pertes de l'année 2006 sur cessions de valeurs mobilières, de droits sociaux et assimilés	VH	913 999 088

En cas de pertes antérieures à 2006 non encore imputées, indiquez le détail sur papier libre ou joignez le tableau de suivi n° 2041 SP.

4 | Revenus fonciers

Micro foncier : recettes brutes sans abattement	BE	7 366 036 815	Déficit imputable sur les revenus fonciers	BB	1 707 491 262
Revenus fonciers	BA	23 267 738 080	Déficit imputable sur le revenu global	BC	3 018 289 964
Prime d'assurances des loyers impayés (voir notice)	BF	9 209 051	Déficits antérieurs non encore imputés	BD	5 948 217 108
Cochez si vous avez souscrit une déclaration 2044-spéciale	BZ	.	(lignes BA, BB, BC, BD : report du résultat déterminé sur la déclaration n° 2044)		

Montant des loyers courus du 1/1/98 au 30/9/98 provenant des immeubles pour lesquels la cessation ou l'interruption de la location est intervenue en 2006 et qui ont été soumis à la taxe additionnelle au droit de bail — TQ 85 718 837

Revenus exceptionnels ou différés à imposer suivant le système du quotient

Montant total des revenus à imposer — ØXX 649 721 976 (n'incluez pas ces revenus dans les autres rubriques de la déclaration)

Nature, détail et année d'échéance normale de ces revenus ou année de début d'exploitation. Pour les bénéfices agricoles exceptionnels indiquez également le nom du titulaire et, le cas échéant, son adhésion à un C.G.A.

** Ou partenaire du PACS.*

6 | Charges et imputations diverses

Montant de la CSG déductible calculée sur les revenus du patrimoine	DE	2 195 625 724		
Pensions alimentaires versées à des enfants majeurs en vertu d'une décision de justice devenue définitive avant 2006	GI	635 825 751	GJ	146 469 138
Autres pensions alimentaires versées à des enfants majeurs	EL	1 829 043 252	EM	233 090 468
Autres pensions alimentaires versées en vertu d'une décision de justice devenue définitive avant 2006	GP	2 691 201 447		
Autres pensions alimentaires	GU	1 875 313 698		
Indiquez les noms et adresses des bénéficiaires de vos versements au bas de cette page				
Déductions diverses	DD	760 369 461		
Sommes à ajouter au revenu imposable (ex : CSG déductible accordée à tort)	GH	1 606 957		

Épargne retraite : PERP et produits assimilés (PREFON, COREM et C.G.O.S.)

• Épargne versée en 2006		Vous		Conjoint*		Personne à charge
Cotisations versées en 2006 au titre d'un PERP, PREFON, COREM et C.G.O.S.	RS	1 142 958 918	RT	482 353 640	RU	1 737 793
Rachats de cotisations en 2006 (PREFON, COREM et C.G.O.S.)	SS	139 872 004	ST	68 961 350	SU	66 024
Plafond de déduction	PS	.	PT	.	PU	.

- Si vous êtes nouvellement domicilié en France en 2006 aprés avoir résidé à l'étranger au cours des trois années précédentes, cochez la case — QW .
- Détermination du plafond de déduction pour les revenus 2007

Cotisations aux régimes obligatoires d'entreprise de retraite supplémentaire ou aux contrats « Madelin » et abondement de l'entreprise à un PERCO en 2006	QS	746 093 882	QT	142 763 541	QU	1 224 165

7 | Charges ouvrant droit à réduction ou à crédit d'impôt (Attention = joignez les reçus ou les justificatifs)

Dons à des organismes d'aide aux personnes en difficulté (maximum 479 €)			UD	365 386 661	UE	
Autres dons que ceux de la ligne UD			UF	1 169 787 516	UG	
Report des versements des années antérieures	XS	17 676 160	XT	73 654 519	XU	82 278 505
Cotisations syndicales des salariés et pensionnés	AC	157 097 020	AE	44 625 478	AG	194 284
	AD		AF		AH	
Nombre d'enfants à charge poursuivant leurs études	EA	Collège 1 624 970	EC	Lycée 1 610 879	EF	Ens. Supérieur 1 235 327
Frais de garde des enfants de moins de 7 ans au 31-12-2006	GA	1 437 911 975	GB	337 006 513	GC	29 859 841
Indiquez les noms et adresses des bénéficiaires de vos versements au bas de cette page						
Sommes versées pour l'emploi d'un salarié à domicile			DF	7 202 761 528		
Si vous-même, votre conjoint ou une des personnes à votre charge est titulaire de la carte d'invalidité d'au moins 80 %, cochez la case					DG	.
Nombre d'ascendants bénéficiaires de l'APA âgés de plus de 65 ans					DL	21 729
Indiquez les noms et adresses des bénéficiaires de vos versements au bas de cette page						
Dépenses d'accueil dans un établissement pour personnes âgées dépendantes			CD	3 303 673 141	CE	103 935 033
Primes de rente survie, contrats d'épargne handicap			GZ	205 500 107		
Prestations compensatoires : sommes versées en 2006			WN	404 236 854		
sommes totales décidées par jugement en 2006 ou capital reconstitué			WO	494 422 422		
capital fixé en substitution de rente			WM	17 747 299		
report des sommes décidées en 2005			WP	18 102 918		
Intérêts des prêts étudiants (contrats conclus à compter du 01-09-2005)			UK	4 112 931		
Vous souscrivez une déclaration de revenus 2006 à votre nom, vous étiez rattaché à un foyer fiscal en 2005 et vous avez déjà versé des intérêts en 2005, cochez la case					VO	.
Dépenses en faveur des économies d'énergie et du développement durable						
Équipements utilisant une source d'énergie renouvelable					WF	2 022 306 016
Acquisition de chaudière à condensation, matériaux d'isolation thermique et appareils de régulation de chauffage installés au plus tard le 31-12 de la 2e année suivant la date d'aquisition d'un logement achevé avant le 1-01-1977					WG	1 164 041 392
Autre acquisition de chaudière à condensation, matériaux d'isolation thermique, appareils de régulation de chauffage et coût des équipements de raccordement à un réseau de chaleur					WH	2 085 236 966
Acquisition de chaudière à basse température					WQ	292 410 534
Dépenses en faveur de l'aide aux personnes						
Équipements pour les personnes âgées ou handicapées					WJ	108 240 421
Travaux de prévention des risques technologiques ou acquisition d'ascenseurs électriques à traction					WI	27 853 001

8 | Autres imputations, reprises de réductions d'impôt, conventions internationales, divers

Personnes domiciliées en France percevant des revenus à l'étranger (cf. Déclaration n° 2047)				
Revenus exonérés (y compris salaires et primes des détachés à l'étranger) autres que ceux déclarés page 3, retenus pour le calcul du taux effectif d'imposition			TI	2 613 450 861
Revenus étrangers soumis en France à l'impôt sur le revenu et imposables à la CRDS			TL	306 275 785
Revenus étrangers imposables en France et ouvrant droit à un crédit d'impôt égal au montant de l'impôt français correspondant à ces revenus			TK	3 710 696 169
Personnes non domiciliées en Fance : revenus de sources française et étrangère retenus pour le calcul du taux moyen d'imposition			TM	135 582 766
Élus locaux : indemnités de fonction soumises à la retenue à la source	BY	377 016 330	CY	55 879 847
Total des plus-values en report d'imposition non expiré			UT	13 095 338 968
Reprises de réductions ou de crédits d'impôt			TF	5 654 622
Revenus exonérés non retenus pour l'application du taux effectif (revenus provenant d'organismes internationaux, de représentations étrangères...)			FV	.
Contrat d'assurance-vie conclu auprès d'un établissement établi hors de France			TT	.
Comptes bancaires à l'étranger			UU	.

Autres renseignements, souscription de la déclaration pour une autre personne, nom et adresse des bénéficiaires de vos versements

9 YF YG YH YK YT YU YV YW YZ

* Ou partenaire du PACS.