The Financial Feasibility and Redistributive Impact of a Basic Income Scheme in Catalonia

Paper for the *10th Congress of the Basic Income European Network (BIEN)*,
Barcelona, 19-20 september 2004

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ABSTRACT

In this paper we present some provisional results of a research project which aims to show how Basic Income is economically feasible in Catalonia and how it would have a strong redistributive impact on income distribution. We use a micro-simulation program specifically designed for this aim in order to evaluate different policy options of tax-benefit integration which involve a Basic Income, and we apply it to an extensive sample of Catalan income tax payers data. The results show that the proposed reforms are broadly feasible in financial terms, and that their impact on Catalan income distribution would be strongly progressive. However, the political feasibility of the reform still remains as an open question.

INTRODUCTORY NOTE

The study we are presenting in this paper is still being developed as a research project financed by the Jaume Bofill Foundation (Barcelona) under the title "Feasibility and Impact of a Universal Basic Income in Catalonia". The project, which is to be finished at the end of 2004, is the first empirical attempt to investigate the economical and political feasibility of a Basic Income scheme in Catalonia, and the authors intend to launch it as a concrete political proposal into the Catalan political agenda. The following results are then to be considered as provisional ones. The microsimulation model we present has been reshaped and modified many times and is still being so. This is the first public presentation of some of the results of the project. The authors will be glad to receive any comment, criticism or suggestion.

1. AIMS AND SCOPE OF THE PROJECT

As the discussion on Basic Income (BI from now on) and its cognates has been progressing in recent years, several studies have tried to analyse the economical feasibility of the proposal in different countries. Among these studies, the most interesting and informative ones are, no doubt, those which make use of micro-simulation devices in order to estimate the financial costs and distributive impact of the reform.

Micro-simulation programs which work with income distribution data and taxpayers databases are specially suitable for evaluating the distributive effects of a BI scheme, since the general idea behind the reform advocated by BI supporters is tax-benefit integration, and one of its aims is to achieve a strongly progressive redistribution of income. Models such as POLIMOD have been used for this purpose, for example, in the British case (see Atkinson, 1995; Atkinson & Sutherland, 1989; Jordan, Agulnik, Burbidge and Duffin, 2000). In Spain, a micro-simulation model inspired in POLIMOD, ESPASIM, has been developed and applied to the evaluation of BI and similar schemes (Mercader, 2003). Recently, other useful models with the same aims and potentialities have been presented (Arcarons & Calonge, 2003, 2004; Oliver Rullán & Spadaro, 2004; Sanz, 2003).

Other studies on the economic and political feasibility of BI in Spain deal with how to finance the cost of the reform or with their effects on typically defined individuals and households, but do not rely on empirical income tax and income distribution data (Noguera, 2001; Pinilla, 2004; Pinilla & Sanzo, 2004).

Our model tries to follow this line of research; it is the first one in making such kind of micro-simulation for Catalonia, and it is based on the following inspiring principles (which are very familiar to -and usually advocated by- BI supporters):

- Tax-benefit integration.
- Universal BI paid directly to every individual in a totally unconditional way.
- BI replaces any other existing public cash benefit to the extent its amount is lower; if it is higher, BI is topped-up by the existing benefit until its present

amount (in Spain this is likely to happen, for example, with most of contributory earnings-related state pensions or unemployment benefits).

- The amount of a "total" BI is taken to be equal to the Minimum Wage (which is in fact quite low in Spain -more or less equal to the poverty line for one individual alone-, although the Government now in office has started to boost it).

- The underaged do not receive the total amount of BI, but only a certain percentage (half or one third, depending on the cases).

- The tax rates are equalized for every income regardless its source.

- Any other tax relief, allowance or exemption in income tax is dropped.

By virtue of this reform, it is intended to achieve a substantial reduction in the inequality of income distribution, a simplification and greater coherence of the tax and benefit systems, and, of course, an individual income guarantee for everyone regardless his/her age, work or household condition.

Let us mention, to finish this section, that the model we are applying in this paper has one clear limitation that we will not address here, but that is very relevant for the political -as different from the economical- feasibility of the proposed reform: we are working on the highly fictitious assumption that the Catalan Administration controls 100% of the income tax revenue which is payed in Catalonia (the reality is that it controls only one third). However, since we are committed here only with the question of economic feasibility, this political problem will not be dealt with.

2. DATA AND SAMPLE

The database we have used[1] consists of an individualized, properly stratified, and, of course, anonymous sample of income tax (IRPF) payers for Catalonia in the year 2000. The sample contains about 210.000 cases and displays the main variables and magnitudes defined by the income tax, making it possible to attribute in an almost

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[1] The authors want to thank the Direcció General de Programació Econòmica and the Direcció General de Tributs of the Generalitat de Catalunya (Catalan Government) for making available the database information used in this work.

exhaustive way any flow of taxable net income (coming from work, capital, or any other economic activity) to Catalan income tax payers. In addition, the sample is highly representative of the main social and familiar traits of the tax payers, such as age, marital status, number of people in the household, and whether the income tax declaration is individual or joint. This information is the basis of the microsimulation model we have developed in order to present a BI proposal for Catalonia in the year 2003.

Although this database may perform very well for several microsimulation purposes, we would like to mention three important restrictions we face when using it for simulating BI schemes:

1) In the first place, and obviously, the sample only covers income tax payers and the population in their households. The microsimulations, then, cannot include the rest of the Catalan population, which is an important collective for us, since -one may assume- it gathers most of the worse-off in terms of income distribution. As we have said, BI would be paid to everyone, regardless their income level.

This first restriction may be addressed in two different ways:

a) From the side of the cost of BI, it is of course possible to calculate the amount of resources needed to pay BI to the population not covered by the sample, and to add that cost to the total cost of the simulated reform.

Fortunately, we have estimated that this additional cost would be almost exactly compensated by the savings BI would allow in terms of public cash benefits and social spending. As a glance at **Tables 1 and 2** will easily show, the additional cost of BI for the population not covered by the sample may be estimated in 8041,86 million euros, while the estimated saving in social spending due to the implementation of a BI would be of 8162,87 million euros; so, if we compensate the first amount with the second, we would have a little surplus of 121 million euros. This happy circumstance allows us to work with the sample and the microsimulation model alone in terms of financing BI, without worrying very much about the rest of the population.

TABLE 1
ESTIMATED SAVING IN SOCIAL SPENDING WITH A BI REFORM
(Catalonia, 2003)

BI = 5412 €/year (451 €/month)

Source	Saving (in million euros)
Contributory pensions higher than BI	3712,78
Contributory pensions lower than BI	2759,92
Civil servants pensions	257,79
Non-contributory pensions	216,90
Non-contributory unemployment benefits	221,98
Contributory unemployment benefits	473,63
Minimum insertion income (PIRMI)	37,65
Child benefits	311,10
Educational grants	18,77
Administrative spending (estimated saving of 33%)	152,30
TOTAL	8162,87

Source: own ellaboration from IDESCAT data (Catalan Statistics Institute), except Calero & Bonal (2003) for educational grants.

TABLE 2
ESTIMATED COST OF BI
FOR THE POPULATION NOT COVERED BY THE SAMPLE
(Catalonia, 2003)

BI = 5412 €/year (451 €/month)

Population	Total	Covered by the sample	Not covered by the sample	Cost of BI for the population not covered by the sample (in million euros)
Under 18	1068770	792791	275979	746,79
18 or more	5218630	3870688	1347942	7295,06
Total	6287400	4663479	1623921	8041,86

Source: own ellaboration from the sample data and IDESCAT (Catalan Statistics Institute).

b) From the side of the distributive impact of the reform, we certainly cannot integrate at this stage the income distribution data of the sample with that of the rest of the not covered population (we are, however, working in order to make some estimation). Anyway, it is very reasonable to assume that, since the population not included do not pay income tax, most of them -leaving aside now tax evasion- are people with lower incomes than those included in the sample. This is good news, because it means that our model will probably always *underestimate* the progressivity of the redistributive impact of the reform, as far as we work only with the sample data. If the model -as we will see it is the case- predicts much more egalitarian income distributions after the reform, then we can easily assume than the real resulting distribution will be even more progressive when including the population not covered by the sample.

2) The second restriction is that the sample unit is the taxpayer, not the household, and that there is no direct variable available which allows us to identify how many taxpayers live in each household in those cases when the tax declaration is individual. However, in this case we have been able to estimate the number of households covered by the sample (2.175.306), using and indirect method which combines variables such as "type of income tax declaration" (individual or joint), "number of dependant sons" and "marital status".

3) Thirdly, the data correspond to the year 2000, while our purpose is to launch a reform proposal for the year 2003. However, it has been easy to adopt some hypothesis on the growth of the taxable base or the net incomes which are included in the sample, using the aggregated growth rates of those magnitudes for the period 2000-2002.[2]

An outline of some of the main magnitudes of the sample, once estimated and projected for the year 2003, may be found in **Tables 3 and 4**.

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[2] We would like to point out here that microsimulation models have a strong potential for "refreshing" the reference information. See Arcarons & Calonge (2003) or Sanz & others (2003: 19-24) for a review of these possibilities.

TABLE 3
MAIN MAGNITUDES OF THE DATA SAMPLE (1)

DATA RAISED AND PROJECTED FOR 2003					
Number of cases in the sample	Taxpayers	Population covered	Households covered	Aggregated net income (Millions €)	Tax revenue Millions €
209.364	2.722.220	4.681.306	2.175.306	54.912,46	9.530,81

TABLE 4
MAIN MAGNITUDES OF THE DATA SAMPLE (2)

DATA RAISED AND PROJECTED FOR 2003	
Adults under 26	154.504
Adults between 26-35	753.181
Adults between 36-45	769.576
Adults between 46-55	662.577
Adults between 56-65	486.605
Adults over 65	672.644
Declared sons with tax effects	1.182.219
Total population (Adults + declared sons)	4.681.306
Disabled (between 33% and 65% of disability)	154.487
Disabled (more than 65% of disability)	34.546
Declared ascendants with tax effects, up to 65 (included in the 5th adult group) en 5º grupo de adultos)	1.485
Declared ascendants with tax effects, over 65 (included in the 6th adult group)	79.758

We would like, to end this section, to make two remarks regarding Tables 3 and 4: a) The contents of the Tables are broadly consistent with the available data from population census and economic statistic databases. b) Note that a considerable number of "declared sons" in income tax may be over 18: that is the reason why this number differs from estimations in Table 2, above.

3. THE MICROSIMULATION MODEL

In this section we will describe the most relevant traits of the microsimulation model we have developed for this research project, in order to obtain different

simulations for the financing and distributive impact of a BI scheme. We would like to remark that this microsimulation is entirely applicable to other countries just by replacing the database with the appropriate one.

3.1. Definition of key concepts

We will define here the key concepts for designing the simulations and for analyzing their distributive effects.

RN is the total sum of net incomes (including both the general and the special tax base of the Spanish income tax, IRPF); as we mentioned, a projection has been made (distinguishing between the two tax bases) in order to update the amounts for the year 2003. This magnitude may be understood as a measure of individuals' well-being.

RB is the Basic Income paid to individuals. The model allows to introduce different kinds of payment: a) individual payment for adults, b) individual payment for people under 18, and c) household payment, which may be combined with any of the other two. As we said in section 1, the simulations presented here introduce a BI for adults equal to the Spanish Minimum Wage for 2003 (that is 5412 € per year), while those under 18 receive half of that amount.

QRB is the income tax revenue under the reform proposed in each simulation. This sum may be obtained under two different assumptions: a) under the first one, it is possible to distinguish between the general tax base (income coming from work) and the special one (income coming from any other source), and to apply to each a different tax rate, with different income brackets; b) under the second, the same tax rates and income brackets may be applied to the sum of the two tax bases. Under the two cases, all tax exemptions, allowances and reductions are dropped.

QIRPF is the income tax revenue under fiscal regulation for 2003. To obtain this number it is necessary to adapt the database in order to introduce the legal changes

approved for the 2003 income tax[3]. This sum is obviously constant in every simulation and allows to define the concepts of deficit, surplus, gain and loss.

"Gain" or "Loss" are the result of comparing the situation before and after the introduction of the BI reform. Formally speaking it is equal to **QIRPF – QRB + RB**: a positive value indicates a Gain and a negative one a Loss. From this value one can directly derive the concept of "winner" or "loser" and calculate the respective percentages.

Financial surplus or deficit is the concept which compares the global sum of RB and QRB. Of course it is worth to remark that the resulting number as such does not take into account QIRPF. For this reason, any simulation with a "financial surplus" lower than QIRPF has to be considered as not neutral regarding present tax revenue, since it would not provide the income tax revenue obtained in 2003.

Population is the number of individuals which are dependant on the tax payer. This concept is quite important because it makes possible to relate the sample unit -the individual tax payer- with the BI which is paid to every household or family. It makes a lot of sense to take this into account when analysing the distribution between deciles provided by the microsimulation model.

QRB s/RN, **QIRPF s/RN** and **QRB-RB s/RN** are three different tax rates, calculated over RN (or total net income). The first two of them represent the tax burden imposed by the BI reform and by the 2003 income tax regulation, respectively. The third tax rate is essential for our purposes, since it refers to the "real" tax burden imposed when the "nominal" tax rate is compensated by the amount of the BI received. These rates are also a very interesting data when analysing the distribution between deciles after the reform.

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[3] This adaptation have been presented in Arcarons & Calonge (2004).

3.2. What the simulations offer

The results offered by the microsimulation model may be classified in five broad sets:

1) First, those relative to the total amounts of the magnitudes defined as **RN**, **RB**, **QRB** and **QIRPF.** The model also provides some useful statistics such as the mean, standard error, and confidence intervals for all those variables. This set of results allow to obtain two basic data: the financial deficit/surplus generated by the BI reform, and the global percentages of winners and losers under that reform.

2) Second, the distribution of all those magnitudes between deciles, to which the model adds the concepts of "Population" and the tax rates **QRB s/RN, QIRPF s/RN** and **QRB-RB s/RN**. This is a very useful information, since it makes possible to analyse how the introduction of a BI affects individuals differently depending on their income.

3) Third, different indexes are calculated, regarding inequality (Gini), concentration and progressivity (Kakwani y Suits) and redistribution (Redistributive Effect ~ Reynolds-Smolensky), for defined variables such as **RB, QRB** and **QIRPF**. In this case, the reference variables for calculating these indexes are **RN** and two new magnitudes which represent the situation *ex-ante* (**RN - QIRPF**) and *ex-post* (**RN − QRB + RB**) the introduction of the BI reform. These indexes are the ones usually calculated in redistribution and inequality studies in order to analyze the global impact of a certain reform.

4) Fourth, the model obtains a table with the distribution of winners and losers within each decile when the reform is introduced, including the percentage of winners/losers, the global gain or loss, and the *per capita* gain or loss. This is a very useful instrument in order to grasp the redistributive impact of the reform on different income groups.

5) Finally, all these results are complemented with some graphs which show the Lorenz and concentration curves, the effective tax rates curves, and the distribution of winners and losers in each decile (in this paper we will only include the latter: see Appendix).

There are two additional possibilities offered by the microsimulation model: the comparison between different reforms or simulations, and the simulation for typical individuals and/or typical households:

a) The first option allows to obtain the distribution between deciles for the variables **RN**, **RB**, **QRB** and **QIRPF**, as long as the winners/losers data, but comparing between two different simulations. The difference is, then, that now the reference values are those of the first simulation and not those of the fiscal situacion for the year 2003.

b) Thanks to second option, one may evaluate the impact of the introduction of the BI reform on one specific type of individual or household.

An extended example of the results this option may provide is shown in the **Appendix** (**Tables A1 and A2**), both for households with one and two taxpayers respectively. We will not go into the analysis of this example here, but just will remark some technical issues to be beared in mind when reading it: 1) The concept of "Media de RN" (Mean net income) referred to each decile is not the most representative measure of inequality, since the dispersion is very high, for example, in the lowest and highest deciles. 2) This same variable is not differentiated in Tables A1 and A2, that is, is referred to the whole sample, and therefore appears as the same for households with one or two taxpayers. 3) In Table A2 (households with two income tax payers), we assume that 66,66% of the net income is earned by the first taxpayer and the other 33,33% by the second one, and we estimate QIRP (total tax burden under present income tax) as the most favourable one (be it trough individual or joint income tax declaration).

4. SOME FIRST SIMULATIONS: ON THE FINANCIAL FEASIBILITY OF A BASIC INCOME SCHEME IN CATALONIA

In this section we will present some selected simulations already done using the model, which explore only some of the possibilities described above. To be concrete, we have chosen four different simulations, which may be described as follows:

Simulation 1 (see **Appendix, Table A3**)

In this simulation we ask ourselves which flat tax rate would self-finance a BI of the above-mentioned amount (451€/month for every adult person, and half for the underaged; this amount is equal to the Spanish Minimum Wage for the year 2003). The simulation shows that the required rate would be of 57,5%.

Simulation 2 (see **Appendix, Table A4**)

The second simulation shows that, if we only wanted to finance 50% of such BI out of income tax revenue, the flat tax rate required would be of 37,5%.

Simulation 3 (see **Appendix, Table A5**)

A third simulation will show what happens if we keep the present income tax rates, but eliminate every tax allowance or relief, and apply the same rates that today are imposed to income from work to any other declared income whatever its source.

Simulation 4 (see **Appendix, Table A6**)

The fourth simulation introduces five income brackets and apply progressive tax rates to them (from 20% to 60%), higher than present ones.

The results of these simulations, regarding financial as well as distributive issues, are shown in **Tables A3, A4, A5 and A6** in the **Appendix**. Let us make some comments about them, having in mind four sensible criteria for their evaluation in order to achieve feasible and desirable BI schemes:

1) Self-financing of the reform (that is, minimization of the net deficit).

2) Progressivity of its redistributive impact.

3) More than 50% of the population covered win (bearing in mind, anyway, that most of the population not covered by the simulation would win too, for reasons already mentioned).

4) That the *real* or *actual* tax rates after the reform (that is, once we take into account not only the new *nominal* tax rates but also the effect of BI) are not extremely high.

Let us then try to evaluate the results of the four simulations presented in the Appendix with the help of these conditions.

In **Simulation 1**, a flat-tax rate of 57,5% is shown as the one required in order to fulfil the first condition, that is, self-financing of the reform. This rate would raise enough tax revenue (31.574 million euros) to finance BI for all individuals covered by the sample (22.145 million euros) *plus* the tax revenue raised by present income tax rates (9.530 million euros)[4]. The reform would have a strongly progressive impact on the income distribution, as a simple look at the Gini index and other indicators shows. The percentage of net winners with the reform would be of 56,87%. And, surprisingly, the real tax rates are only extremely high for the highest part of the richest decile; the six first deciles would have lower real tax rates than under present income tax, the seventh decile would stay the same, the eighth and ninth would face a substantial, but not extreme, raise, and the real rate would go beyond 36% only for the tenth decile. In addition, the first five deciles would face negative real tax rates.

In **Simulation 2**, we try to answer the following question: which flat-tax rate would be required in order to finance only 50% of the reform out of income tax revenue? (keeping other things equal). We think it is useful to ask this question because income tax is of course only one of the tools available for a tax system (Hills, 2000), and, in the case of Catalonia today, responsible for only 42,29% of all tax revenues; the rest comes from several and less politically visible sources (mainly VAT and direct

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[4] Let us recall here that, once we add the cost of the BI for the population not covered by the sample, and discount the savings in social spending due to the reform, we have a little surplus of 121 million euros.

taxation on fuel, alcohol, tobacco and other consumptions) (see **Graph 1,** in **Appendix**). It is therefore not impossible to think of a greater financing of the reform out of these other fiscal tools.[5]

In this case the flat-tax rate required would be of 37,3%. This would raise 20.482 million euros, which would be enough in order to finance the present tax revenue (9.530 million euros) and 50% of the cost of BI (that is 11.072 million euros) (see also footnote 4). The progressivity of the reform would be still very strong, but lower than in Simulation 1. In this case, 94,46% of the individuals covered by the sample would win with the reform, but we should bear in mind that 50% of the BI would be financed here through direct taxation and that we have no data available on the distributive impact of that tax raise (which would be most likely regressive as a whole). Finally, the real tax rates after the reform would be remarkably lower than present ones for all deciles (except a raise of less than one point for the richest 2%): this could somewhat compensate for some income groups the raise in direct taxation, but knowing to what extent this is true would require different data from those used in this study.

Simulation 3 poses a different question: what would happen if we tried to give the same BI to everyone but keep the present tax rates, impose them on all sources of income, and eliminate any kind of tax relief and allowance? This means that we would not be applying a flat-tax rate any more, but five different and progressive tax rates to five income brackets. As it is to be expected, then the reform would be far from self-financing: this design would generate a huge deficit of 16.608 million euros (9.530 million euros of present tax revenue plus 7.078 million euros of BI not financed by the income tax revenue after the reform). The progressivity of the reform would be still strong (slightly lower than in Simulation 1 but higher than in Simulation 2). Obviously almost everyone would win (except 1,3% of the population), and the real tax rates would be much lower for everyone except for the richest 2%).

Simulation 4 keeps the idea of progressive tax rates along five income brackets, but with a much higher nominal rate for each one of them (and also introducing some

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[5] We could think of some reasons for that type of financing (decrease of the tax burden on income from work) and against it (inflationary nature and usual lack of progressivity of direct taxation), but we will not consider these arguments here.

changes in the delimitation of the brackets). In this case, the reform would still generate a deficit of 10.237 million euros. Progressivity would be higher here than in any other of the four simulations, and 88,30% of the population covered by the sample would win. The real tax rates would be lower than present ones except for the richest 5% of that population.

In sum, we may say that the second, third and fourth evaluation criteria that we proposed (progressivity, more than 50% of winners, and non extreme real tax rates) are broadly satisfied by all the simulations presented (if we leave aside the remarkably high real tax rate imposed to the richest decile in Simulation 1); but only Simulation 1 would strictly satisfy the first criteria (self-financing), and Simulation 2 would do it at the price of raising direct taxation, with uncertain and possibly undesirable distributive effects.

5. SOME FINAL COMMENTS

The simulations we have presented in the previous section, as well as others not included here, allow us to list some remarks on the feasibility and distributive impact of a BI scheme in Catalonia, on the problems it would have to face, and on the work still to be done in order to tackle those problems:

- We have seen that in order for the reform to be self-financing we need to introduce remarkably high *nominal* tax rates. In the case of a flat-tax rate, this would be of 57,5%, while if we introduce a set of different progressive tax rates, then the rate for the richest income brackets should be even much higher (and this may be a reason to favour a flat rate when introducing a BI at the same time). This fact does not necessarily affect the economic feasibility of the proposal, but seems to place serious doubts about its political feasibility.
- However, we have also shown that these high *nominal* tax rates are not so dramatic when they are compared with the *actual* tax rates they would imply, once we take into account the whole impact of the reform (including

the effect of BI): in fact, *an extreme raise of actual tax rates is only to be expected for the richest income decile* (that is, for 10% -or even less- of the taxpayers). To the extent we are concerned with the political feasibility of BI, this point has to be strongly stressed when explaining the proposal in the public sphere. The whole sense of BI proposals has to do precisely with the combined tax-benefit impact of the pair "raised tax rates + BI".

- Let us recall, moreover, that most of the population not covered by the sample (about 25% of the total) would very probably win with the reform, so the real percentage of losers among the whole population would be even lower than the one which results from the simulations.

- Another interesting fact is that our simulation model, in its present shape, allows to see how income is redistributed between households; we have shown that the degree of progressivity of that redistribution when introducing a BI would be very high, but we may assume that *intra-household redistribution* (that is, redistribution among individuals) would be even higher -and perhaps the most relevant one if one of BI's rationales is to enhance individual's autonomy and 'real freedom'-. Unfortunately, we do not have at this stage the required tools for quantifying such an impact.

- Finally, Tables A1 and A2 (see Appendix) show a disturbing effect of the reform for those taxpayers who live alone, compared with the other types of households: this, of course, has to do with scale economies, and we should worry about it only if we have reasons to assume that some people are not free at all to chose the type of household where they want to live (which seems a very reasonable assumption). We have not addressed this question here, but let us note again that our model allows to introduce a "household BI" which would tackle this problem (an idea suggested and developed by Pinilla & Sanzo, 2004). This is one of the issues which the project should explore in the future.

We will end this paper by asking the following question: what could be done in order to try to overcome some of the above-mentioned problems and to make the reform more "marketable" in the political realm? Let us just mention some options:

- *Lowering the amount of BI*: one may say that the BI we have introduced in our simulations is really an ambitious one, and that a good 'second-best' when facing financing and political problems would be to lower its amount. We have done some simulation work on this hypothesis. Some broad comments on the results are the following:

  - If we pay only half of the proposed amount (that is, 2706 € / year), then the flat tax-rate needed to finance that BI (37,5%) is not enough lower to avoid all problems of political feasibility, but the redistributive impact of the reform is very much lower and less progressive (although 51% of the taxpayers still win); the real tax rates would be higher than now from the seventh decile on. Maybe the lesson then is that, once we introduce a BI system, is better to 'go for the whole cake'.

  - If we pay a quite lower BI of, say, 1200 € / year (that would be 100 € / month), then the present income tax rates, under the assumptions adopted in Simulation 3, would be broadly enough to finance the reform, 59% of taxpayers would win, and actual tax rates would be quite acceptable; however, redistribution would not be so high as in the other simulations, and of course we would have to keep the whole set of present social benefits to top-up the BI in defined situations. Anyway, this maybe a good way of introducing the "BI culture" into present tax and benefit systems.

  - Another option would be to lower the BI paid to the underaged. Our model shows that to pay to them 1/3 of the standard amount instead of ½ would save about 1.000 million euros (which is an important number, but far from enough to make the reform self-financed out of income tax in Simulations 2, 3 and 4). We think to pay an even lower BI for the underaged would not be advisable, since their BI would then easily fall below the amount of present child benefits.

- *Finding other sources of financing*: we may of course think of other sources of revenue in order to finance the reform. We made reference, when commenting Simulation 2, to other fiscal tools like direct taxation, and to the problems that using them would probably place in distributive terms. But we do not need to limit ourselves to that option: there are other public expenditures that maybe would lose much of their sense when a BI system is operating (such as some of the expenditures in employment policies, occupational training, social services, subsidies to labour hiring and other subsidies to employers, exemptions of social security contributions, subsidies to private schools or hospitals, agrarian subsidies, fight against crime, prisons and courts of justice, new tax revenues due to the legalization of a part of the black economy, not to mention the rest of fiscal fraud).

- *Introducing a Negative Income Tax*: finally, another option would be to make the reform distributively neutral for the central deciles in income distribution, through a Negative Income Tax mechanism. This would of course lower the percentage of winners (and also of losers: most of the taxpayers would remain as in present situation), and would still affect negatively work incentives and enhance poverty and employment traps. But it may be worth to reshape and use the simulation model in order to calculate the results of this option.

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APPENDIX

TABLE A1. GAIN AND LOSS BY TYPE OF HOUSEHOLD
(HOUSEHOLDS WITH ONE TAXPAYER, FOR SIMULATION 1)

	Decila de RN	Media de RN	QIRPF	QRB	QIRPF s/RN	QRB-RB s/RN	G o P
Hogar=1 Adulto	10%	2.058 €	0 €	1.183 €	0,00%	-205,59%	4.231 €
	20%	5.505 €	0 €	3.165 €	0,00%	-40,85%	2.249 €
	30%	8.360 €	214 €	4.807 €	2,55%	-7,27%	821 €
	40%	10.910 €	508 €	6.273 €	4,66%	7,87%	-350 €
	50%	13.395 €	1.463 €	7.702 €	10,92%	17,08%	-825 €
	60%	16.105 €	2.113 €	9.260 €	13,12%	23,88%	-1.733 €
	70%	19.615 €	2.956 €	11.279 €	15,07%	29,90%	-2.908 €
	80%	24.075 €	4.205 €	13.843 €	17,47%	35,01%	-4.224 €
	90%	31.195 €	6.199 €	17.937 €	19,87%	40,14%	-6.324 €
	95%	43.670 €	10.778 €	25.110 €	24,68%	45,10%	-8.918 €
	98%	62.330 €	18.605 €	35.840 €	29,85%	48,81%	-11.821 €
	100%	149.845 €	57.986 €	86.161 €	38,70%	53,89%	-22.760 €
Hogar=2 Adultos	10%	2.058 €	0 €	1.183 €	0,00%	-468,68%	9.645 €
	20%	5.505 €	0 €	3.165 €	0,00%	-139,21%	7.663 €
	30%	8.360 €	0 €	4.807 €	0,00%	-72,03%	6.022 €
	40%	10.910 €	0 €	6.273 €	0,00%	-41,76%	4.556 €
	50%	13.395 €	647 €	7.702 €	4,83%	-23,34%	3.773 €
	60%	16.105 €	1.297 €	9.260 €	8,05%	-9,74%	2.866 €
	70%	19.615 €	2.140 €	11.279 €	10,91%	2,29%	1.690 €
	80%	24.075 €	3.253 €	13.843 €	13,51%	12,52%	239 €
	90%	31.195 €	5.247 €	17.937 €	16,82%	22,79%	-1.862 €
	95%	43.670 €	9.520 €	25.110 €	21,80%	32,70%	-4.762 €
	98%	62.330 €	17.075 €	35.840 €	27,39%	40,13%	-7.936 €
	100%	149.845 €	56.456 €	86.161 €	37,68%	50,27%	-18.876 €
Hogar=1 Adulto + 1 menor	10%	2.058 €	0 €	1.183 €	0,00%	-337,14%	6.938 €
	20%	5.505 €	0 €	3.165 €	0,00%	-90,03%	4.956 €
	30%	8.360 €	109 €	4.807 €	1,30%	-39,65%	3.423 €
	40%	10.910 €	403 €	6.273 €	3,70%	-16,94%	2.252 €
	50%	13.395 €	1.295 €	7.702 €	9,67%	-3,13%	1.714 €
	60%	16.105 €	1.945 €	9.260 €	12,08%	7,07%	806 €
	70%	19.615 €	2.788 €	11.279 €	14,21%	16,09%	-369 €
	80%	24.075 €	4.009 €	13.843 €	16,65%	23,77%	-1.713 €
	90%	31.195 €	6.003 €	17.937 €	19,24%	31,47%	-3.813 €
	95%	43.670 €	10.519 €	25.110 €	24,09%	38,90%	-6.470 €
	98%	62.330 €	18.290 €	35.840 €	29,34%	44,47%	-9.429 €
	100%	149.845 €	57.671 €	86.161 €	38,49%	52,08%	-20.368 €
Hogar=1 Adulto + 2 menores	10%	2.058 €	0 €	1.183 €	0,00%	-468,68%	9.645 €
	20%	5.505 €	0 €	3.165 €	0,00%	-139,21%	7.663 €
	30%	8.360 €	0 €	4.807 €	0,00%	-72,03%	6.022 €
	40%	10.910 €	291 €	6.273 €	2,67%	-41,76%	4.846 €
	50%	13.395 €	1.115 €	7.702 €	8,32%	-23,34%	4.241 €
	60%	16.105 €	1.765 €	9.260 €	10,96%	-9,74%	3.334 €
	70%	19.615 €	2.608 €	11.279 €	13,29%	2,29%	2.158 €
	80%	24.075 €	3.799 €	13.843 €	15,78%	12,52%	785 €
	90%	31.195 €	5.793 €	17.937 €	18,57%	22,79%	-1.316 €
	95%	43.670 €	10.241 €	25.110 €	23,45%	32,70%	-4.040 €
	98%	62.330 €	17.952 €	35.840 €	28,80%	40,13%	-7.059 €
	100%	149.845 €	57.334 €	86.161 €	38,26%	50,27%	-17.998 €

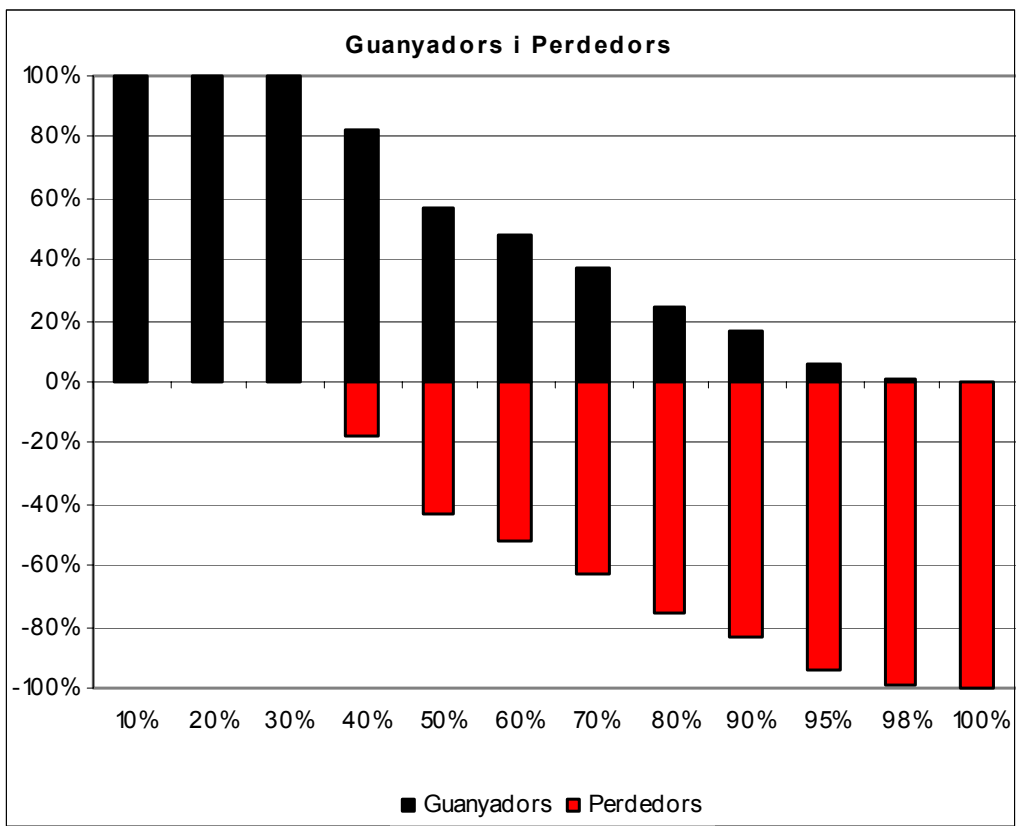|	Decila de RN	Media de RN	QIRPF	QRB	QIRPF s/RN	QRB-RB s/RN	G o P
Hogar=2 Adultos + 1 menor	10%	2.058 €	0 €	1.183 €	0,00%	-600,23%	12.353 €
	20%	5.505 €	0 €	3.165 €	0,00%	-188,39%	10.371 €
	30%	8.360 €	0 €	4.807 €	0,00%	-104,41%	8.729 €
	40%	10.910 €	0 €	6.273 €	0,00%	-66,57%	7.263 €
	50%	13.395 €	419 €	7.702 €	3,13%	-43,55%	6.253 €
	60%	16.105 €	961 €	9.260 €	5,97%	-26,55%	5.237 €
	70%	19.615 €	1.804 €	11.279 €	9,20%	-11,51%	4.061 €
	80%	24.075 €	2.874 €	13.843 €	11,94%	1,28%	2.567 €
	90%	31.195 €	4.855 €	17.937 €	15,56%	14,11%	453 €
	95%	43.670 €	9.002 €	25.110 €	20,61%	26,50%	-2.572 €
	98%	62.330 €	16.445 €	35.840 €	26,38%	35,78%	-5.859 €
	100%	149.845 €	55.826 €	86.161 €	37,26%	48,47%	-16.799 €
Hogar=2 Adultos + 2 menores	10%	2.058 €	0 €	1.183 €	0,00%	-731,77%	15.060 €
	20%	5.505 €	0 €	3.165 €	0,00%	-237,56%	13.078 €
	30%	8.360 €	0 €	4.807 €	0,00%	-136,80%	11.436 €
	40%	10.910 €	0 €	6.273 €	0,00%	-91,38%	9.970 €
	50%	13.395 €	194 €	7.702 €	1,45%	-63,76%	8.735 €
	60%	16.105 €	601 €	9.260 €	3,73%	-43,36%	7.584 €
	70%	19.615 €	1.444 €	11.279 €	7,36%	-25,31%	6.408 €
	80%	24.075 €	2.514 €	13.843 €	10,44%	-9,97%	4.914 €
	90%	31.195 €	4.435 €	17.937 €	14,22%	5,43%	2.741 €
	95%	43.670 €	8.447 €	25.110 €	19,34%	20,30%	-420 €
	98%	62.330 €	15.770 €	35.840 €	25,30%	31,44%	-3.827 €
	100%	149.845 €	55.151 €	86.161 €	36,81%	46,66%	-14.766 €
Hogar=2 Adultos + 3 menores	10%	2.058 €	0 €	1.183 €	0,00%	-863,32%	17.767 €
	20%	5.505 €	0 €	3.165 €	0,00%	-286,74%	15.785 €
	30%	8.360 €	0 €	4.807 €	0,00%	-169,18%	14.143 €
	40%	10.910 €	0 €	6.273 €	0,00%	-116,20%	12.677 €
	50%	13.395 €	0 €	7.702 €	0,00%	-83,97%	11.248 €
	60%	16.105 €	271 €	9.260 €	1,68%	-60,17%	9.961 €
	70%	19.615 €	916 €	11.279 €	4,67%	-39,11%	8.587 €
	80%	24.075 €	1.986 €	13.843 €	8,25%	-21,21%	7.093 €
	90%	31.195 €	3.819 €	17.937 €	12,24%	-3,25%	4.832 €
	95%	43.670 €	7.633 €	25.110 €	17,48%	14,11%	1.473 €
	98%	62.330 €	14.780 €	35.840 €	23,71%	27,10%	-2.110 €
	100%	149.845 €	54.161 €	86.161 €	36,14%	44,85%	-13.049 €

TABLE A2. GAIN AND LOSS BY TYPE OF HOUSEHOLD
(HOUSEHOLDS WITH TWO TAXPAYERS, FOR SIMULATION 1)

	Decila de RN	Media de RN	QIRPF	QRB	QIRPF s/RN	QRB-RB s/RN	G o P
Hogar=2 Adultos	10%	2.058 €	0 €	1.183 €	0,00%	-468,68%	9.645 €
	20%	5.505 €	0 €	3.165 €	0,00%	-139,21%	7.663 €
	30%	8.360 €	0 €	4.807 €	0,00%	-72,03%	6.022 €
	40%	10.910 €	0 €	6.273 €	0,00%	-41,76%	4.556 €
	50%	13.395 €	269 €	7.702 €	2,01%	-23,34%	3.396 €
	60%	16.105 €	476 €	9.260 €	2,96%	-9,74%	2.044 €
	70%	19.615 €	830 €	11.279 €	4,23%	2,29%	380 €
	80%	24.075 €	2.254 €	13.843 €	9,36%	12,52%	-760 €
	90%	31.195 €	3.702 €	17.937 €	11,87%	22,79%	-3.406 €
	95%	43.670 €	7.346 €	25.110 €	16,82%	32,70%	-6.936 €
	98%	62.330 €	13.239 €	35.840 €	21,24%	40,13%	-11.772 €
	100%	149.845 €	48.542 €	86.161 €	32,39%	50,27%	-26.790 €
Hogar=2 Adultos + 1 menor	10%	2.058 €	0 €	1.183 €	0,00%	-600,23%	12.353 €
	20%	5.505 €	0 €	3.165 €	0,00%	-188,39%	10.371 €
	30%	8.360 €	0 €	4.807 €	0,00%	-104,41%	8.729 €
	40%	10.910 €	0 €	6.273 €	0,00%	-66,57%	7.263 €
	50%	13.395 €	164 €	7.702 €	1,22%	-43,55%	5.998 €
	60%	16.105 €	371 €	9.260 €	2,30%	-26,55%	4.647 €
	70%	19.615 €	662 €	11.279 €	3,38%	-11,51%	2.919 €
	80%	24.075 €	1.981 €	13.843 €	8,23%	1,28%	1.674 €
	90%	31.195 €	3.401 €	17.937 €	10,90%	14,11%	-1.000 €
	95%	43.670 €	6.982 €	25.110 €	15,99%	26,50%	-4.593 €
	98%	62.330 €	12.784 €	35.840 €	20,51%	35,78%	-9.520 €
	100%	149.845 €	47.956 €	86.161 €	32,00%	48,47%	-24.668 €
Hogar=2 Adultos + 2 menores	10%	2.058 €	0 €	1.183 €	0,00%	-731,77%	15.060 €
	20%	5.505 €	0 €	3.165 €	0,00%	-237,56%	13.078 €
	30%	8.360 €	0 €	4.807 €	0,00%	-136,80%	11.436 €
	40%	10.910 €	0 €	6.273 €	0,00%	-91,38%	9.970 €
	50%	13.395 €	52 €	7.702 €	0,39%	-63,76%	8.593 €
	60%	16.105 €	258 €	9.260 €	1,60%	-43,36%	7.241 €
	70%	19.615 €	526 €	11.279 €	2,68%	-25,31%	5.491 €
	80%	24.075 €	1.713 €	13.843 €	7,12%	-9,97%	4.114 €
	90%	31.195 €	3.097 €	17.937 €	9,93%	5,43%	1.403 €
	95%	43.670 €	6.592 €	25.110 €	15,09%	20,30%	-2.275 €
	98%	62.330 €	12.296 €	35.840 €	19,73%	31,44%	-7.300 €
	100%	149.845 €	47.341 €	86.161 €	31,59%	46,66%	-22.576 €
Hogar=2 Adultos + 3 menores	10%	2.058 €	0 €	1.183 €	0,00%	-863,32%	17.767 €
	20%	5.505 €	0 €	3.165 €	0,00%	-286,74%	15.785 €
	30%	8.360 €	0 €	4.807 €	0,00%	-169,18%	14.143 €
	40%	10.910 €	0 €	6.273 €	0,00%	-116,20%	12.677 €
	50%	13.395 €	0 €	7.702 €	0,00%	-83,97%	11.248 €
	60%	16.105 €	93 €	9.260 €	0,58%	-60,17%	9.783 €
	70%	19.615 €	361 €	11.279 €	1,84%	-39,11%	8.033 €
	80%	24.075 €	1.449 €	13.843 €	6,02%	-21,21%	6.557 €
	90%	31.195 €	2.668 €	17.937 €	8,55%	-3,25%	3.681 €
	95%	43.670 €	6.020 €	25.110 €	13,78%	14,11%	-140 €
	98%	62.330 €	11.620 €	35.840 €	18,64%	27,10%	-5.270 €
	100%	149.845 €	46.439 €	86.161 €	30,99%	44,85%	-20.771 €

TABLE A3. SIMULATION 1

SIMULACIÓ-1

PARÀMETRES I CARACTERÍSTIQUES

Renda Bàsica per adult	5.414,40 € anuals
Renda Bàsica per menor de 18 anys	2.707,20 € anuals
Renda Bàsica per llar	No es contempla

Base imposable general i especial conjuntes

Tarifa Base conjunta			
TRAM-1	0€	En endav.	57,50%

RESULTATS GENERALS

Variables	MITJANA (€)				TOTAL (milions d'€)			
	Valor	Err. Est.	Limits 95%		Valor	Err. Est.	Limits 95%	
			Inf.	Sup.			Inf.	Sup.
Rendiment net (RN)	20.171,94	106,85	19.962,51	20.381,38	54.912,46	469,91	53.991,43	55.833,48
Renda Bàsica (RB)	8.135,26	21,32	8.093,48	8.177,04	22.145,96	141,68	21.868,27	22.423,65
Quota supòsit RB (QRB)	11.598,87	61,44	11.478,44	11.719,29	31.574,66	270,20	31.045,07	32.104,25
Quota supòsit IRPF (QIRPF)	3.501,12	24,65	3.452,80	3.549,44	9.530,81	87,28	9.359,74	9.701,88

Declarants	2.722.220	
Població detectada	4.681.306	Superàvit Finançament RB = 9.429 Milions d'€
Nombre de llars detectades	2.175.736	% de Guanyadors = 56,87%

DECILS (ordenació segons RN): Rendiment net, Renda Bàsica i Quotes

Variables	10% acum.	20% acum.	30% acum.	40% acum.	50% acum.	60% acum.	70% acum.	80% acum.	90% acum.	95% acum.	98% acum.	100% acum.
Rendiment net (RN)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Renda Bàsica (RB)	8,261%	8,781%	9,310%	9,740%	10,247%	10,542%	10,733%	10,405%	10,909%	5,553%	3,314%	2,206%
	8,261%	17,042%	26,352%	36,092%	46,338%	56,880%	67,613%	78,018%	88,927%	94,479%	97,794%	100,000%
Quota supòsit RB (QRB)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Quota supòsit IRPF (QIRPF)	0,031%	0,355%	1,193%	2,221%	3,498%	5,033%	7,241%	10,606%	16,105%	13,576%	13,928%	26,214%
	0,031%	0,386%	1,579%	3,800%	7,298%	12,331%	19,571%	30,177%	46,282%	59,858%	73,786%	100,000%
Població	7,747%	8,422%	9,067%	9,637%	10,223%	10,567%	10,926%	10,574%	11,225%	5,786%	3,501%	2,325%
	7,747%	16,169%	25,236%	34,873%	45,097%	55,663%	66,589%	77,163%	88,388%	94,174%	97,675%	100,000%

DECILS (ordenació segons RN): Tipus impositius

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
QRB s/RN	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%	57,500%
QIRPF s/RN	0,527%	2,260%	4,992%	7,127%	9,137%	10,947%	12,915%	15,420%	18,081%	21,751%	26,082%	30,655%
(QRB-RB) s/RN	-269,0%	-72,3%	-33,1%	-15,1%	-4,7%	4,2%	13,0%	22,3%	29,0%	36,8%	43,1%	51,5%

ÍNDEXS: Desigualtat, Concentració, Progressivitat i Redistribució

ÍNDEXS	VARIABLES	RN	RN - QIRPF	RN - QRB + RB
GINI		0,4615	0,4163	0,2930
CONCENTRACIÓ	Renda Bàsica	0,0493	0,0593	0,1586
	Quota supòsit RB	0,4615	0,4604	0,4205
	Quota supòsit IRPF	0,6817	0,6705	0,6061
KAKWANI	Renda Bàsica	-0,4122	-0,3570	-0,1344
	Quota supòsit RB	0,0000	0,0441	0,1275
	Quota supòsit IRPF	0,2202	0,2542	0,3131
SUITS	Renda Bàsica	-0,4247	-0,3677	-0,1460
	Quota supòsit RB	0,0000	0,0543	0,1386
	Quota supòsit IRPF	0,2701	0,3126	0,3569
EFECTE REDISTRIBUTIU	Renda Bàsica	-0,2786	-0,3403	-0,1275
	Quota supòsit RB	0,0000	0,1009	0,2895
	Quota supòsit IRPF	0,0462	0,0676	0,0830

Distribució de Guanyadors-Perdedors (ordenació segons RN)

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
% Guanyadors	100,00%	100,00%	99,64%	82,07%	56,68%	47,74%	37,70%	24,89%	16,55%	6,26%	0,87%	0,23%
Guany total (Milions d'€)	1.510.23	1.116.83	866.40	680.22	596.94	504.42	378.06	216.44	127.64	16.25	2.77	2.84
Guany *per capita* (€)	5.548	4.103	3.194	3.044	3.869	3.881	3.684	3.195	2.833	1.908	3.880	22.407
% Perdedors	0,00%	0,00%	-0,37%	-17,93%	-43,35%	-52,21%	-62,36%	-75,12%	-83,39%	-93,78%	-99,09%	-99,67%
Pèrdua total (Milions d'€)	0,00	0,00	0,06	19,67	92,11	209,77	383,56	670,58	1.058,17	913,11	867,71	1.702,20
Pèrdua per capita (€)	0	0	62	403	781	1.476	2.259	3.279	4.661	7.153	10.723	31.368

Guanyadors i Perdedors

■ Guanyadors ■ Perdedors

Simulació-1

SIMULACIÓ-2

PARÀMETRES I CARACTERÍSTIQUES

Renda Bàsica per adult	5.414,40 € anuals
Renda Bàsica per menor de 18 anys	2.707,20 € anuals
Renda Bàsica per llar	No es contempla

Base imposable general i especial conjuntes

Tarifa Base conjunta

TRAM-1	0€	En endav.	37,30%

RESULTATS GENERALS

Variables	MITJANA (€)				TOTAL (milions d'€)			
	Valor	Err. Est.	Límits 95% Inf.	Límits 95% Sup.	Valor	Err. Est.	Límits 95% Inf.	Límits 95% Sup.
Rendiment net (RN)	20.171,94	106,85	19.962,51	20.381,38	54.912,46	469,91	53.991,43	55.833,48
Renda Bàsica (RB)	8.135,26	21,32	8.093,48	8.177,04	22.145,96	141,68	21.868,27	22.423,65
Quota supòsit RB (QRB)	7.524,13	39,86	7.446,02	7.602,25	20.482,35	175,28	20.138,80	20.825,89
Quota supòsit IRPF (QIRPF)	3.501,12	24,65	3.452,80	3.549,44	9.530,81	87,28	9.359,74	9.701,88

Declarants	2.722.220	
Població detectada	4.681.306	Dèficit Finançament RB = 1.664 Milions d'€
Nombre de llars detectades	2.175.736	% de Guanyadors = 94,46%

DECILS (ordenació segons RN): Rendiment net, Renda Bàsica i Quotes

Variables	10% acum.	20% acum.	30% acum.	40% acum.	50% acum.	60% acum.	70% acum.	80% acum.	90% acum.	95% acum.	98% acum.	100% acum.
Rendiment net (RN)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Renda Bàsica (RB)	8,261%	8,781%	9,310%	9,740%	10,247%	10,542%	10,733%	10,405%	10,909%	5,553%	3,314%	2,206%
	8,261%	17,042%	26,352%	36,092%	46,338%	56,880%	67,613%	78,018%	88,927%	94,479%	97,794%	100,000%
Quota supòsit RB (QRB)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Quota supòsit IRPF (QIRPF)	0,031%	0,355%	1,193%	2,221%	3,498%	5,033%	7,241%	10,606%	16,105%	13,576%	13,928%	26,214%
	0,031%	0,386%	1,579%	3,800%	7,298%	12,331%	19,571%	30,177%	46,282%	59,858%	73,786%	100,000%
Població	7,747%	8,422%	9,067%	9,637%	10,223%	10,567%	10,926%	10,574%	11,225%	5,786%	3,501%	2,325%
	7,747%	16,169%	25,236%	34,873%	45,097%	55,663%	66,589%	77,163%	88,388%	94,174%	97,675%	100,000%

DECILS (ordenació segons RN): Tipus impositius

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
QRB s/RN	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%	37,300%
QIRPF s/RN	0,527%	2,260%	4,992%	7,127%	9,137%	10,947%	12,915%	15,420%	18,081%	21,751%	26,082%	30,655%
(QRB-RB) s/RN	-289,2%	-92,5%	-53,3%	-35,3%	-24,9%	-16,0%	-7,2%	2,1%	8,8%	16,6%	22,9%	31,3%

ÍNDEXS: Desigualtat, Concentració, Progressivitat i Redistribució

ÍNDEXS	VARIABLES	RN	RN - QIRPF	RN - QRB + RB
GINI		0,4615	0,4163	0,3198
CONCENTRACIÓ	Renda Bàsica	0,0493	0,0593	0,1374
	Quota supòsit RB	0,4615	0,4604	0,4372
	Quota supòsit IRPF	0,6817	0,6705	0,6323
KAKWANI	Renda Bàsica	-0,4122	-0,3570	-0,1824
	Quota supòsit RB	0,0000	0,0441	0,1173
	Quota supòsit IRPF	0,2202	0,2542	0,3125
SUITS	Renda Bàsica	-0,4247	-0,3677	-0,1975
	Quota supòsit RB	0,0000	0,0543	0,1271
	Quota supòsit IRPF	0,2701	0,3126	0,3586
EFECTE REDISTRIBUTIU	Renda Bàsica	-0,2786	-0,3403	-0,1173
	Quota supòsit RB	0,0000	0,0363	0,0666
	Quota supòsit IRPF	0,0462	0,0676	0,0633

Distribució de Guanyadors-Perdedors (ordenació segons RN)

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
% Guanyadors	100,00%	100,00%	100,00%	100,00%	100,00%	99,66%	98,30%	90,94%	82,11%	73,89%	74,43%	71,41%
Guany total (Milions d'€)	1.623,41	1.419,53	1.326,26	1.260,63	1.241,77	1.179,93	1.075,79	883,13	822,43	361,67	223,63	287,25
Guany *per capita* (€)	5.963	5.215	4.872	4.631	4.560	4.349	4.020	3.567	3.679	3.596	3.679	7.388
% Perdedors	0,00%	0,00%	0,00%	0,00%	0,00%	-0,30%	-1,76%	-9,06%	-17,83%	-26,15%	-25,53%	-28,49%
Pèrdua total (Milions d'€)	0,00	0,00	0,00	0,00	0,00	0,14	1,90	13,12	38,13	56,93	60,53	340,26
Pèrdua per capita (€)	0	0	0	0	0	170	397	532	786	1.600	2.903	21.936

Guanyadors i Perdedors

| | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 95% | 98% | 100% |

■ Guanyadors ■ Perdedors
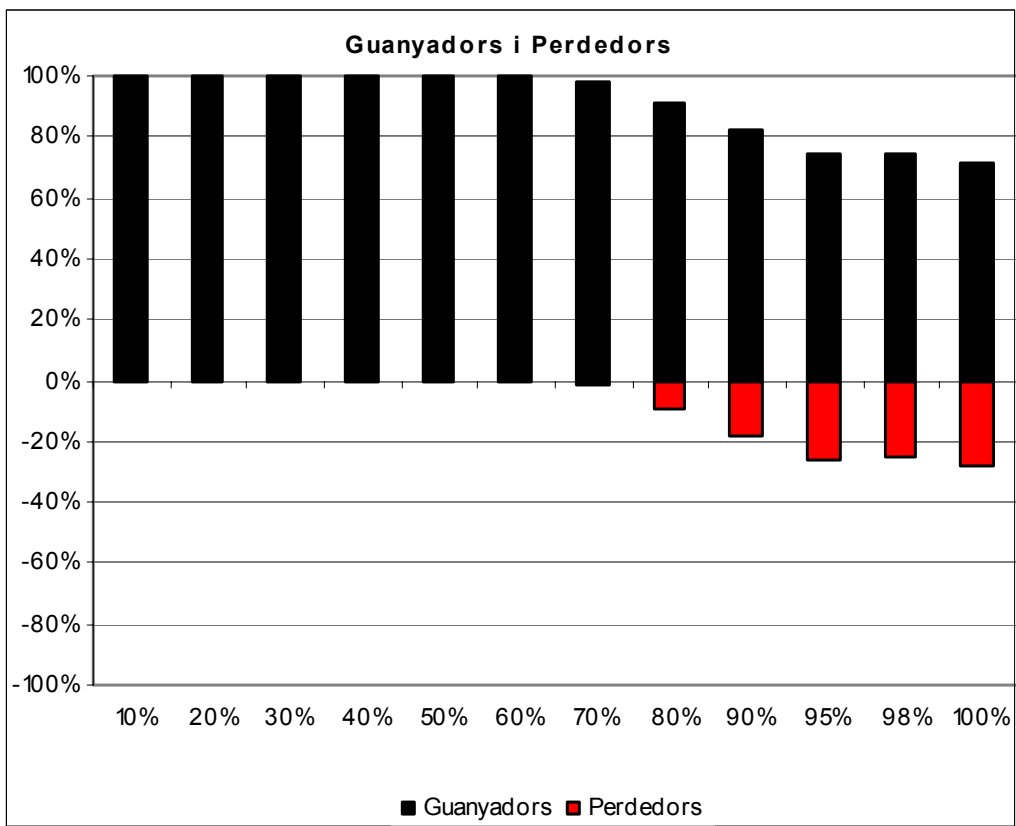
Simulació-2

TABLE A5. SIMULATION 3

SIMULACIÓ-3
PARÀMETRES I CARACTERÍSTIQUES

Renda Bàsica per adult	5.414,40 € anuals
Renda Bàsica per menor de 18 anys	2.707,20 € anuals
Renda Bàsica per llar	No es contempla

Base imposable general i especial conjuntes

Tarifa Base conjunta			
TRAM-1	0€	4000€	15,00%
TRAM-2	4000€	13800€	24,00%
TRAM-3	13800€	25800€	28,00%
TRAM-4	25800€	45000€	37,00%
TRAM-5	45000€	En endav.	45,00%

RESULTATS GENERALS

Variables	MITJANA (€)				TOTAL (milions d'€)			
	Valor	Err. Est.	Límits 95%		Valor	Err. Est.	Límits 95%	
			Inf.	Sup.			Inf.	Sup.
Rendiment net (RN)	20.171,94	106,85	19.962,51	20.381,38	54.912,46	469,91	53.991,43	55.833,48
Renda Bàsica (RB)	8.135,26	21,32	8.093,48	8.177,04	22.145,96	141,68	21.868,27	22.423,65
Quota supòsit RB (QRB)	5.535,00	42,58	5.451,54	5.618,46	15.067,49	147,66	14.778,08	15.356,89
Quota supòsit IRPF (QIRPF)	3.501,12	24,65	3.452,80	3.549,44	9.530,81	87,28	9.359,74	9.701,88

Declarants	2.722.220		
Població detectada	4.681.306	Dèficit Finançament RB = 7.078 Milions d'€	
Nombre de llars detectades	2.175.736	% de Guanyadors = 98,68%	

DECILS (ordenació segons RN): Rendiment net, Renda Bàsica i Quotes

Variables	10% acum.	20% acum.	30% acum.	40% acum.	50% acum.	60% acum.	70% acum.	80% acum.	90% acum.	95% acum.	98% acum.	100% acum.
Rendiment net (RN)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Renda Bàsica (RB)	8,261%	8,781%	9,310%	9,740%	10,247%	10,542%	10,733%	10,405%	10,909%	5,553%	3,314%	2,206%
	8,261%	17,042%	26,352%	36,092%	46,338%	56,880%	67,613%	78,018%	88,927%	94,479%	97,794%	100,000%
Quota supòsit RB (QRB)	0,558%	1,737%	2,976%	4,081%	5,172%	6,496%	8,281%	10,548%	15,007%	11,773%	11,497%	21,874%
	0,558%	2,294%	5,270%	9,352%	14,523%	21,019%	29,301%	39,849%	54,856%	66,629%	78,126%	100,000%
Quota supòsit IRPF (QIRPF)	0,031%	0,355%	1,193%	2,221%	3,498%	5,033%	7,241%	10,606%	16,105%	13,576%	13,928%	26,214%
	0,031%	0,386%	1,579%	3,800%	7,298%	12,331%	19,571%	30,177%	46,282%	59,858%	73,786%	100,000%
Població	7,747%	8,422%	9,067%	9,637%	10,223%	10,567%	10,926%	10,574%	11,225%	5,786%	3,501%	2,325%
	7,747%	16,169%	25,236%	34,873%	45,097%	55,663%	66,589%	77,163%	88,388%	94,174%	97,675%	100,000%

DECILS (ordenació segons RN): Tipus impositius

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
QRB s/RN	15,000%	17,461%	19,695%	20,701%	21,359%	22,337%	23,351%	24,246%	26,636%	29,821%	34,038%	40,439%
QIRPF s/RN	0,527%	2,260%	4,992%	7,127%	9,137%	10,947%	12,915%	15,420%	18,081%	21,751%	26,082%	30,655%
(QRB-RB) s/RN	-311,5%	-112,3%	-70,9%	-51,9%	-40,8%	-30,9%	-21,1%	-10,9%	-1,8%	9,1%	19,6%	34,4%

ÍNDEXS: Desigualtat, Concentració, Progressivitat i Redistribució

ÍNDEXS	VARIABLES	RN	RN - QIRPF	RN - QRB + RB
GINI		0,4615	0,4163	0,3047
CONCENTRACIÓ	Renda Bàsica	0,0493	0,0593	0,1298
	Quota supòsit RB	0,5666	0,5653	0,5467
	Quota supòsit IRPF	0,6817	0,6705	0,6387
KAKWANI	Renda Bàsica	-0,4122	-0,3570	-0,1749
	Quota supòsit RB	0,1050	0,1490	0,2419
	Quota supòsit IRPF	0,2202	0,2542	0,3339
SUITS	Renda Bàsica	-0,4247	-0,3677	-0,1863
	Quota supòsit RB	0,1383	0,1908	0,2819
	Quota supòsit IRPF	0,2701	0,3126	0,3876
EFECTE REDISTRIBUTIU	Renda Bàsica	-0,2786	-0,3403	-0,0972
	Quota supòsit RB	0,0397	0,0741	0,0777
	Quota supòsit IRPF	0,0462	0,0676	0,0607

Distribució de Guanyadors-Perdedors (ordenació segons RN)

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
% Guanyadors	100,00%	100,00%	100,00%	100,00%	100,00%	99,95%	100,00%	99,91%	99,45%	96,45%	87,87%	64,06%
Guany total (Milions d'€)	1.748,36	1.716,82	1.727,09	1.753,73	1.823,32	1.835,47	1.819,26	1.725,94	1.690,34	758,68	361,99	171,31
Guany *per capita* (€)	6.422	6.307	6.344	6.442	6.696	6.746	6.679	6.346	6.244	5.779	5.044	4.912
% Perdedors	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	-0,10%	-0,49%	-3,59%	-12,09%	-35,85%
Pèrdua total (Milions d'€)	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,22	0,73	9,04	32,87	480,18
Pèrdua per capita (€)	0	0	0	0	0	0	0	799	540	1.848	3.329	24.604

Guanyadors i Perdedors
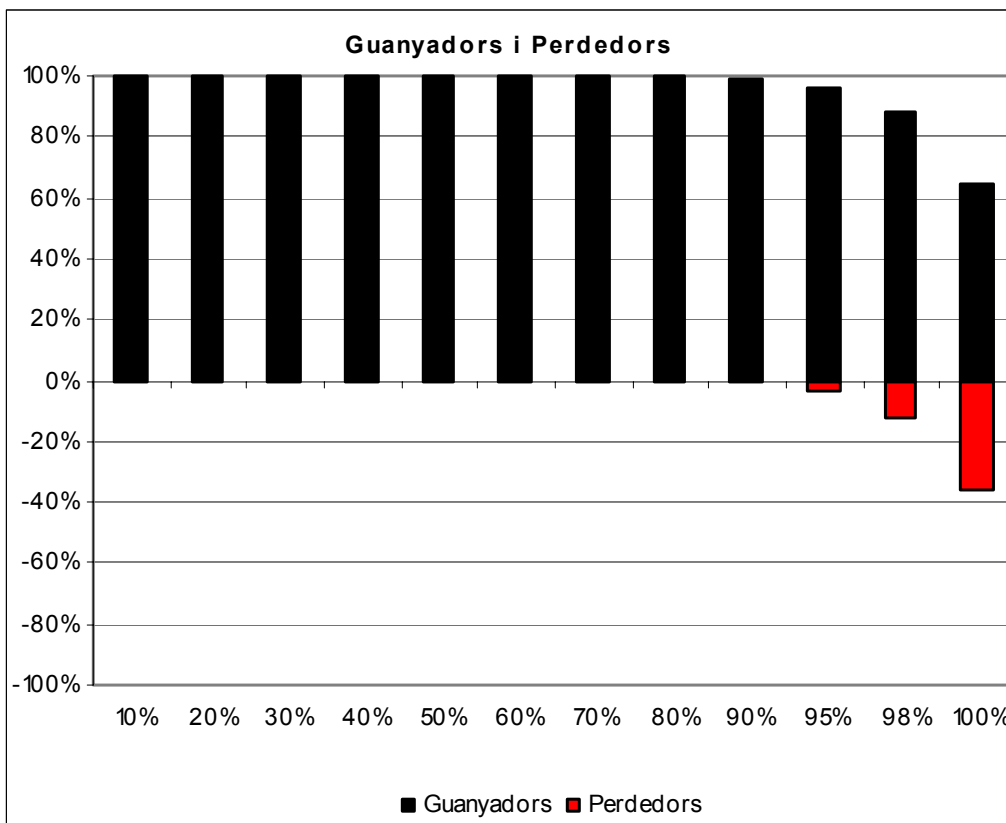
Simulació-3

TABLE A6. SIMULATION 4

SIMULACIÓ-4
PARÀMETRES I CARACTERÍSTIQUES

Renda Bàsica per adult	5.414,40 € anuals
Renda Bàsica per menor de 18 anys	2.707,20 € anuals
Renda Bàsica per llar	No es contempla

Base imposable general i especial conjuntes

Tarifa Base conjunta			
TRAM-1	0€	5000€	20,00%
TRAM-2	5000€	15000€	35,00%
TRAM-3	15000€	25000€	45,00%
TRAM-4	25000€	45000€	55,00%
TRAM-5	45000€	En endav.	60,00%

RESULTATS GENERALS

Variables	MITJANA (€)				TOTAL (milions d'€)			
	Valor	Err. Est.	Limits 95% Inf.	Limits 95% Sup.	Valor	Err. Est.	Limits 95% Inf.	Limits 95% Sup.
Rendiment net (RN)	20.171,94	106,85	19.962,51	20.381,38	54.912,46	469,91	53.991,43	55.833,48
Renda Bàsica (RB)	8.135,26	21,32	8.093,48	8.177,04	22.145,96	141,68	21.868,27	22.423,65
Quota supòsit RB (QRB)	7.875,49	59,16	7.759,54	7.991,44	21.438,82	208,46	21.030,23	21.847,40
Quota supòsit IRPF (QIRPF)	3.501,12	24,65	3.452,80	3.549,44	9.530,81	87,28	9.359,74	9.701,88

Declarants	2.722.220
Població detectada	4.681.306
Nombre de llars detectades	2.175.736

Dèficit Finançament RB = 707 Milions d'€
% de Guanyadors = 88,30%

DECILS (ordenació segons RN): Rendiment net, Renda Bàsica i Quotes

Variables	10% acum.	20% acum.	30% acum.	40% acum.	50% acum.	60% acum.	70% acum.	80% acum.	90% acum.	95% acum.	98% acum.	100% acum.
Rendiment net (RN)	1,020%	2,729%	4,146%	5,410%	6,644%	7,980%	9,731%	11,937%	15,460%	10,833%	9,268%	14,842%
	1,020%	3,749%	7,896%	13,305%	19,949%	27,929%	37,660%	49,597%	65,057%	75,890%	85,158%	100,000%
Renda Bàsica (RB)	8,261%	8,781%	9,310%	9,740%	10,247%	10,542%	10,733%	10,405%	10,909%	5,553%	3,314%	2,206%
	8,261%	17,042%	26,352%	36,092%	46,338%	56,880%	67,613%	78,018%	88,927%	94,479%	97,794%	100,000%
Quota supòsit RB (QRB)	0,523%	1,527%	2,765%	3,897%	5,003%	6,345%	8,357%	10,938%	15,751%	12,282%	11,578%	21,034%
	0,523%	2,050%	4,815%	8,712%	13,715%	20,060%	28,417%	39,355%	55,106%	67,388%	78,966%	100,000%
Quota supòsit IRPF (QIRPF)	0,031%	0,355%	1,193%	2,221%	3,498%	5,033%	7,241%	10,606%	16,105%	13,576%	13,928%	26,214%
	0,031%	0,386%	1,579%	3,800%	7,298%	12,331%	19,571%	30,177%	46,282%	59,858%	73,786%	100,000%
Població	7,747%	8,422%	9,067%	9,637%	10,223%	10,567%	10,926%	10,574%	11,225%	5,786%	3,501%	2,325%
	7,747%	16,169%	25,236%	34,873%	45,097%	55,663%	66,589%	77,163%	88,388%	94,174%	97,675%	100,000%

DECILS (ordenació segons RN): Tipus impositius

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
QRB s/RN	20,000%	21,849%	26,032%	28,127%	29,402%	31,043%	33,530%	35,772%	39,777%	44,267%	48,772%	55,328%
QIRPF s/RN	0,527%	2,260%	4,992%	7,127%	9,137%	10,947%	12,915%	15,420%	18,081%	21,751%	26,082%	30,655%
(QRB-RB) s/RN	-306,5%	-107,9%	-64,5%	-44,5%	-32,8%	-22,2%	-11,0%	0,6%	11,3%	23,6%	34,3%	49,3%

ÍNDEXS: Desigualtat, Concentració, Progressivitat i Redistribució

ÍNDEXS	VARIABLES	RN	RN - QIRPF	RN - QRB + RB
GINI		0,4615	0,4163	0,2751
CONCENTRACIÓ	Renda Bàsica	0,0493	0,0593	0,1427
	Quota supòsit RB	0,5743	0,5730	0,5434
	Quota supòsit IRPF	0,6817	0,6705	0,6235
KAKWANI	Renda Bàsica	-0,4122	-0,3570	-0,1324
	Quota supòsit RB	0,1127	0,1566	0,2683
	Quota supòsit IRPF	0,2202	0,2542	0,3485
SUITS	Renda Bàsica	-0,4247	-0,3677	-0,1392
	Quota supòsit RB	0,1413	0,1948	0,3060
	Quota supòsit IRPF	0,2701	0,3126	0,4004
EFECTE REDISTRIBUTIU	Renda Bàsica	-0,2786	-0,3403	-0,0876
	Quota supòsit RB	0,0722	0,1403	0,1683
	Quota supòsit IRPF	0,0462	0,0676	0,0721

Distribució de Guanyadors-Perdedors (ordenació segons RN)

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	98%	100%
% Guanyadors	100,00%	100,00%	100,00%	100,00%	100,00%	99,95%	99,68%	95,15%	68,15%	32,96%	11,27%	1,01%
Guany total (Milions d'€)	1.720,34	1.651,06	1.582,81	1.533,13	1.529,91	1.453,97	1.275,61	977,92	675,37	157,85	24,10	3,96
Guany per capita (€)	6.320	6.065	5.814	5.632	5.618	5.344	4.701	3.775	3.640	3.519	2.619	7.223
% Perdedors	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	-0,38%	-4,85%	-31,79%	-67,08%	-88,69%	-98,90%
Pèrdua total (Milions d'€)	0,00	0,00	0,00	0,00	0,00	0,00	0,28	7,74	101,37	267,53	444,83	1.526,34
Pèrdua per capita (€)	0	0	0	0	0	0	273	586	1.171	2.930	6.141	28.348

Guanyadors i Perdedors
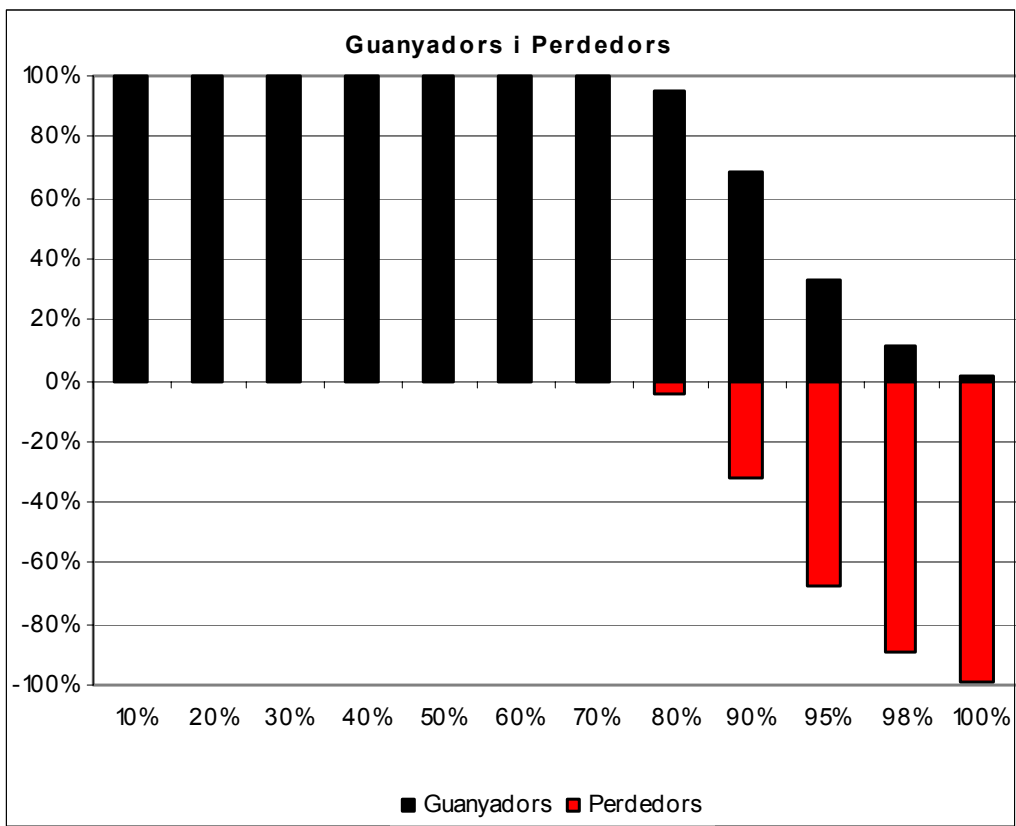
**Simulació-4**

GRAPH 1
SOURCES OF TAX REVENUE IN CATALONIA (2002)

Note: the **first graph** represents the distribution of tax revenue by source in the assumption -which we are doing in this study- that the Catalan Administration controls 100% of the tax system. The **second graph** represents present real situation as far as Catalan Administration is concerned.

IRPF = income tax. IVA = VAT. Especiales = Direct taxation on consumption. Transm. Patrim. = Tax on donations. Sucesiones = estate duty.
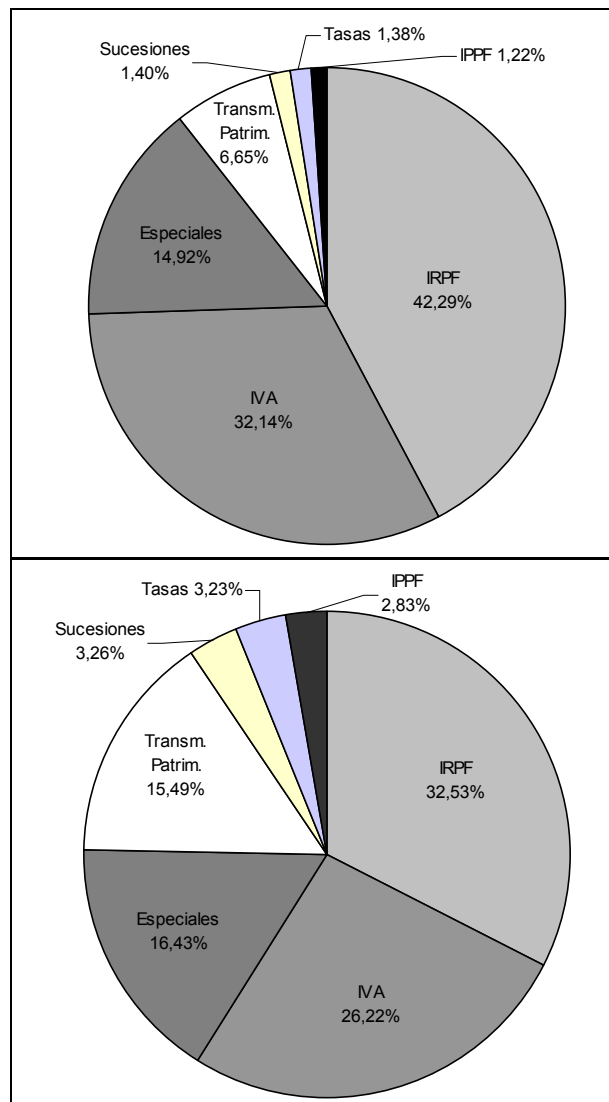
Source: Sánchez (2002) and own elaboration.