The Law on the State Budget for 2018 contains a number of measures designed to reduce the incidence of the personal income tax (IRPF) on workers with income between €12,000 and €18,000, and on certain groups of taxpayers with specific personal circumstances, including those with greater family responsibilities, such as working women, large families and the disabled.

The Banco de España has recently developed various microsimulation models to evaluate the effects of tax reforms on the incomes of different groups of taxpayers.[1] These models simulate the incidence of tax changes on a representative sample of the total population of taxpayers, so that they are especially appropriate to identify the extent to which the tax obligations of different groups of individuals may change.

This box presents the effects of the changes to the IRPF included in the State Budget Law on different groups of taxpayers, according to characteristics such as their level of income and age, making use of the abovementioned microsimulation tools.

In the case of the IRPF, the following changes – reflecting the measures included in the law – have been simulated.[2]

— A rise in the income tax threshold from €12,000 to €14,000.

— An increase in the amount of the reduction in the tax base for gross earnings from employment of between €14,000 and €18,000.[3]

— The introduction of a new tax credit of €1,200 for a disabled spouse.

— An increase of €600 in the large-family deduction, for each child above the minimum number required for the family to obtain the status of ordinary or special large family.

The microsimulation model estimates that some 3.1 million taxpayers will directly benefit from the reform, with an average reduction in the tax of approximately €500.[4] The deciles of the

1 See O. Bover, J. M. Casado, E. García-Miralles, J. M. Labeaga and R. Ramos (2017), *Microsimulation tools for the evaluation of fiscal policy reforms at the Banco de España,* Occasional Papers, No 1707, Banco de España.

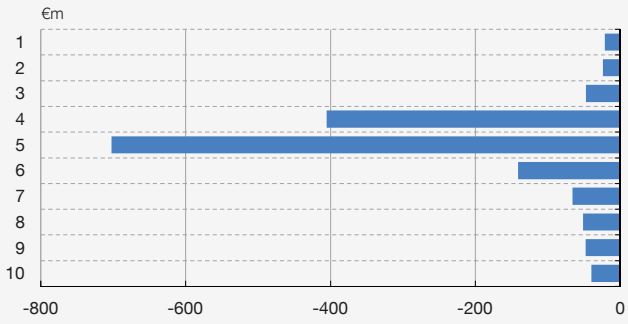
2 The model data correspond to the 2014 IRPF sample of the IEF-AEAT (persons filing tax returns), which is a random sample of somewhat more than two million anonymised IRPF returns for 2014.

3 The maximum amount of the deduction is raised to €5,575 and is applicable to gross income from employment of €14,000 (i.e. the new tax threshold), provided that other income does not exceed €6,500. In practice, other elements of the tax ensure that in that case the tax liability is zero. For incomes of more than €14,000, the deduction declines linearly, reaching zero for gross income from employment of €18,000. Before the reform the maximum amount of the deduction (€3,700) was applicable up to the tax threshold then in force of gross income of €12,000 (with a similar mechanism of linear decline in the abovementioned deduction, which reached zero for gross employment income of approximately €15,400).

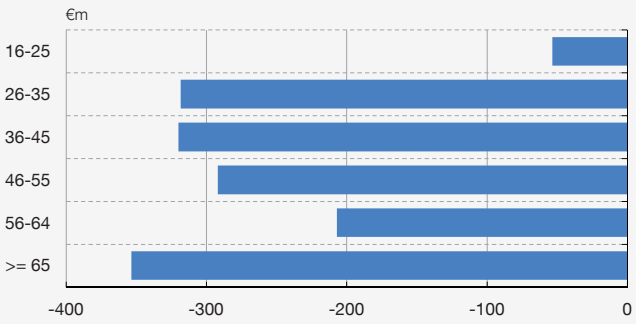
4 In aggregate terms, the microsimulation model estimates that the total cost of the tax reduction is somewhat more than €1.5 billion, while the presentation of the draft State Budget Law estimates a tax reduction of some €2.2 billion. There are three explanations for the difference between the model estimate and the official one. First, the model does not take into account the new deduction for nursery expenses, as this variable is not included in the IRPF return. Second, as the model uses 2014 data the distribution of income is outdated. This may be particularly relevant to the estimate of the cost associated with the increase in the deduction for employment income, insofar as the employment creation observed since 2014 might be expected to have increased the number of persons benefiting from this measure. Third, the model estimates the reductions in tax liability using socio-demographic data for 2014.

Chart 1
SIMULATION OF THE REDUCTION IN IRPF

1 REDUCTION IN IRPF: CHANGE IN REVENUE BY INCOME DECILE



2 REDUCTION IN IRPF: CHANGE IN REVENUE BY AGE GROUP



SOURCE: The Banco de España's IRPF microsimulation model.

income distribution that benefit most from the reform are the fourth and fifth, since it is in these that employees with gross income between €12,000 and €18,000 are mainly situated (see Chart 1.1 and Table 1). Specifically, 2.3 million taxpayers would see an average reduction in their tax liability under the IRPF of some €480. By age group, almost 21% of taxpayers under the age of 35 would pay less tax under the IRPF (some 0.8 million persons), with an average reduction of somewhat less than €450. For their part, 16% of the over-65s (some 0.6 million taxpayers) would see their tax liability under the IRPF reduced by an average of around €600 (see Chart 1.2 and Table 1.2). It should be pointed out that no taxpayers would suffer an increase in their tax liability under the IRPF as a consequence of the reform.

However, it should be noted that the analysis was performed in a partial equilibrium context, so that it does not take into account any effect of the tax changes on agents' economic decisions. In particular, in principle, changes in the taxation of employment income affect individuals' labour supply decisions, and thus, given the increase in net-of-tax wage earnings, there may be economically inactive persons who decide to enter the labour force or persons already in employment who choose to work more hours. Presumably, all these effects will be modest, given the small size of the measures adopted. Finally, the methodology used does not capture the fact that, over a longer time horizon, the financing of measures adopted now will require either reductions in spending or else the raising of additional resources, which would probably affect the net income of the various groups of taxpayers unevenly.

Table 1
REDUCTION IN IRPF: CHANGE IN TAX BY INCOME DECILE

Deciles	Total			Income increases			Income decreases			Income unchanged	
	Population (millions)	Change (€m)	Change (€)	Number (millions)	Percentage of total	Average increase (€)	Number (millions)	Percentage of total	Average reduction (€)	Number (millions)	Percentage of total
1	1.9	21	10.8	0.0	1.1	946.5	0.0	0.0	0.0	1.9	98.9
2	1.9	24	12.3	0.0	1.2	1,027.6	0.0	0.0	0.0	1.9	98.8
3	1.9	47	24.1	0.2	8.6	281.5	0.0	0.0	0.0	1.8	91.4
4	1.9	405	208.0	0.9	43.9	473.9	0.0	0.0	0.0	1.1	56.1
5	1.9	702	360.2	1.4	73.7	489.0	0.0	0.0	0.0	0.5	26.3
6	1.9	141	72.3	0.4	21.6	335.2	0.0	0.0	0.0	1.5	78.4
7	1.9	66	33.8	0.1	4.0	855.4	0.0	0.0	0.0	1.9	96.0
8	1.9	51	26.3	0.0	2.4	1,102.6	0.0	0.0	0.0	1.9	97.6
9	1.9	47	24.4	0.0	2.2	1,094.6	0.0	0.0	0.0	1.9	97.8
10	1.9	39	20.3	0.0	2.0	990.5	0.0	0.0	0.0	1.9	98.0
TOTAL	**19.5**	**1,544**	**79.3**	**3.1**	**16.1**	**493.3**	**0.0**	**0.0**	**-**	**16.3**	**83.9**

SOURCE: The Banco de España's IRPF microsimulation model.

Table 2
REDUCTION IN IRPF: CHANGE IN TAX BY AGE GROUP

Age groups	Total			Income increases			Income decreases			Income unchanged	
	Population (millions)	Change (€m)	Change (€)	Number (millions)	Percentage of total	Average increase (€)	Number (millions)	Percentage of total	Average reduction (€)	Number (millions)	Percentage of total
16-25	0.6	53	87.6	0.1	18.5	474.6	0.0	0.0	0.0	0.5	81.5
26-35	3.5	318	92.2	0.7	21.3	433.6	0.0	0.0	0.0	2.7	78.7
36-45	4.8	320	66.6	0.7	15.4	432.5	0.0	0.0	0.0	4.1	84.6
46-55	4.1	292	72.0	0.6	14.2	507.8	0.0	0.0	0.0	3.5	85.8
56-64	2.7	207	76.7	0.4	13.2	579.0	0.0	0.0	0.0	2.3	86.8
>= 65	3.8	353	92.0	0.6	15.9	578.6	0.0	0.0	0.0	3.2	84.1
TOTAL	**19.5**	**1,544**	**79.3**	**3.1**	**16.1**	**493.3**	**0.0**	**0.0**	**-**	**16.3**	**83.9**

SOURCE: The Banco de España's IRPF microsimulation model.