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The Distributional Effects of the 2015-16 Tax Reform

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A key objective of the Austrian income tax reform to be implemented in 2015-16 lies in substantially lowering the tax burden of wage and income tax payers. Hence, a question of central importance is how the tax reform will affect the net individual and household incomes and which distributional and tax revenue effects are to be expected from the reform. Using microsimulation techniques, the effects caused by the changes in the wage and income tax regime as well as in the social security contributions are quantified for 2016. The results show that the reform leads to an increase of 3.1 percent in average disposable household income. The net income gain in absolute and percentage terms increases with the pre-reform net income. This holds true for earned and pension incomes as well as for household income. As a consequence, income inequality increases slightly. Households with and without children are equally affected by the reform. The simulated loss of fiscal revenue amounts to € 4.9 billion. More than half of this shortfall (56 percent) arises due to lower revenues from households in the top third of the distribution of net household incomes while around 12 percent is attributable to the bottom third.

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1. Introduction

A main objective of the Austrian income tax reform to be implemented in 2015-16 is to noticeably lower the tax burden on wage and income tax payers¹. The Austrian Ministry of Finance estimates the total relief volume of the measures (i.e., without counter-financing) at € 5.2 billion, of which € 4.4 billion can be attributed to the wage and income tax rate reform and € 0.4 billion to the increase and extension of the tax credit or "negative tax" (Schratzenstaller, 2015, in this issue). The present analysis of the distributional and revenue effects of the tax reform based on the WIFO microsimulation model considers the following aspects: changes in the personal income tax rate scale, changes regarding the negative tax (social insurance refunds), the increase in the child tax allowance, modifications concerning the integrated employee and transport tax credit, and the increase in the social security contribution ceiling. Other parts of the tax reform are left out, in particular the (rather small) relief package for companies as well as counter-financing measures, which partly also apply to wage and income tax payers (Schratzenstaller, 2015). The basis for the calculations is the most recently available wave of data from the EU-SILC (European Union Statistics on Income and Living Conditions), an annual household survey with a representative sample of about 6,000 private households in Austria, which delivers information on the living conditions of the Austrian population (Statistics Austria, 2014A). The simulation results apply to the year 2016.

¹ https://www.bmf.gv.at/steuern/Vortrag_Ministerrat_Steuerreform_20152016.pdf?4wcpi6.

2. Simulated changes in the tax regime

This ex ante evaluation estimates the effects of the tax reform on income and distribution ahead of its implementation by means of comparison of two scenarios. In the scenario without the tax reform (baseline scenario), net income in the year 2016 is simulated based on tax and social insurance regulations that would be valid in the year 2016 if the tax reform did not go into effect². The situation upon implementation of the reform in 2016³ is described in the reform scenario⁴. Table 1 contrasts the regulations in these scenarios. The difference between the simulated net incomes with and without the tax reform yields the relief effects for each individual and household in the sample. Grossing up to the population using weighting factors we arrive at the predictions for the overall population.

Table 1: Changes in the tax regime resulting from the 2015-16 tax reform considered in the simulation

2016

	Baseline scenario		Reform scenario	
	Taxable annual income in €	Nominal tax rate in percent	Taxable annual income in €	Nominal tax rate in percent
Income tax rate ¹	0 to 11,000	0.0	0 to 11,000	0.0
	11,001 to 25,000	36.5	11,001 to 18,000	25.0
	25,001 to 60,000	43.214	18,001 to 31,000	35.0
	Over 60,001	50.0	31,001 to 60,000	42.0
			60,001 to 90,000	48.0
			90,001 to 1,000,000	50.0
			Over 1,000,001	55.0
Negative tax: partial refund of employee social security contributions ²				
Employees	10 percent, up to a maximum of € 110 p.a.		50 percent, up to a maximum of € 400 p.a.	
Pensioners	No eligibility		50 percent, up to a maximum of € 110 p.a.	
			In €	
Sum of employee and transport tax credit	345		400	
Child tax allowance				
Claimed by one parent	220		440	
Claimed by both parents, per capita	132		264 ³	
Social security contribution ceiling	4,740		4,840	

Source: Federal Ministry of Finance. – ¹ An exact breakdown of the income tax rate, including the solidarity contribution, can be found in *Schatzenstaller (2015)*. – ² The commuter surcharge is not simulated. – ³ Assumption at the time of the simulation. Based on the federal draft it is now known that an amount of € 300 is foreseen per parent.

3. Data base, tax transfer simulation model and methodology

The estimation of tax reform effects is carried out using the WIFO microsimulation model which is based on data from the EU-SILC (European Union Statistics on Income and Living Conditions). In addition to the information on the composition of households, the data include socio-demographic characteristics and data on the employment situation, income from earnings, other sources of income and the paid working hours of individual household members (*Statistics Austria, 2013*). The most

² Based on the usual adjustment formula, the minimum income threshold, as well as the assessment base and assessment ceiling relevant for unemployment insurance contributions are adjusted by +1.9 percent between 2015 and 2016.

³ A small part of the tax reform 2015-16 (early partial extension of the negative tax for employed persons) will already go into effect in 2015.

⁴ As it was not known at the time of the simulation whether relief for self-employed workers and farmers with low incomes would be carried out in the form of a negative tax or a reduction in social insurance contributions, none of these instruments has been considered in the simulation of net individual income of this group of workers; with an expected relief effect of € 60 million per year, the volume, however, is low measured by the overall volume of the reform. Furthermore, due to a lack of information on the work location of the individuals in the sample, neither the commuter allowance nor the commuter surcharge are simulated. The gradual increase in the family allowance ("Familienbeihilfe") from 2014 is taken into account in the simulation of income in both scenarios and not dealt with as part of the tax reform. For a detailed breakdown of the individual measures, see *Schatzenstaller (2015)*.

recent available 2013 wave of data from the EU-SILC are used for the analysis. For Austria, the sample comprises 13,250 persons of all age groups. Using survey weights provided in the data this corresponds to 8.37 million individuals and 3.7 million households. Of the potential wage and income tax payers an estimated 4.0 million individuals have earnings from employment and 0.8 million from self-employment, while 2.1 million individuals draw retirement pay. In the EU-SILC, the year of reference for the calculation of income is always the previous year. To establish a data base for the year 2016, the incomes are adjusted to inflation based on the realised and projected development of the consumer price index (CPI) for the years 2013 to 2016⁵. This projection is based on the implicit assumption that in 2016 the structures with respect to demographics, labour participation and income will strongly resemble those observed in the years 2012-13⁶. For the calculation of the income components, EU-SILC increasingly relies on administrative data (e.g., income tax statistics, data from pension insurance institutions and the Public Employment Service). Still, certain income sources can only be identified and recorded by means of the respondents' answers and some incomes are strongly underreported (the highest annual income recorded in the EU-SILC 2013 was approximately € 623,400). The survey weights can partly remedy some of these shortcomings as they were constructed, among other reasons, to correct imperfections in the unweighted sample that arise due to several such biases (*Statistics Austria, 2014A*).

The WIFO microsimulation model covers the most important elements of the Austrian tax, social insurance and transfer system⁷. In addition to social security contributions for different occupational groups, wage and income tax liability are simulated for each individual in the data sample taking into consideration various tax credits, tax allowances and deductions and considering the most important social cash transfers. The disposable net income of individuals is calculated for each observation in the sample based on the individual household context (partner income, number and age of the children, etc.). Finally, the results are multiplied by the sample weights to arrive at population figures. Possible labour supply effects are not taken into account.

4. Results of the simulation

Income from earnings and pensions are the main source of income for the majority of households (*Mayrhuber et al., 2015, p. 43*). Since a key objective of the tax reform is to relieve the tax burden on lower and middle incomes, the distributional effects are determined at the individual level in a first step before the disposable household incomes – which are more relevant to distributional issues – are examined. The latter consists of the sum of income from earnings, investments, pensions and social transfers net of taxes and social insurance contributions of the individual household members, plus alimony payments and other private transfers between households (*Statistics Austria, 2013*).

4.1 Effects of the reform on individual income

To determine the distributional effects of the tax reform for wage and income tax payers, in the baseline scenario taxable individuals are sorted by annual net income (gross earned income or pension income net of social security contributions and wage or income tax) and divided into ten groups consisting of an equal number of persons (deciles). The difference between these net incomes and those in the reform scenario yields the amount of tax relief per decile.

⁵ Inflation rate in 2016 according to the current WIFO cyclical forecast from March 2015. According to the CPI the cumulative price increase in the 2012-2016 period is 6.6 percent.

⁶ In fact, for example, the unemployment rate rose by 1.4 percentage points between 2012 and 2014, and the number of employed and self-employed persons rose by 1.5 percent.

⁷ The basic structure of the WIFO microsimulation model is presented in *Grünberger (2009)* and *Rabethge (2009)*. The model is constantly subject to revision.

For employed and self-employed persons the absolute tax relief resulting from the reform increases with net income and ranges from € +163 in the lowest decile to € +1,957 in the highest decile (Table 2)⁸. Measured in relative terms (i.e., in percent of net income), the amount of relief is lower in the bottom third (between 2.0 percent and 2.7 percent) than it is in the middle and upper third of the distribution (between 3.4 percent and 5.1 percent).

This relief pattern is mainly due to the workings of the progressive tax bracket system. In particular, by reducing rates in the lower tax brackets high income earners also benefit, because individual tax liability is calculated as the sum of the tax owed in the individual taxable income brackets. For taxable incomes that cover several progression stages the reduction in tax rates across multiple brackets *ceteris paribus* results in a cumulative advantage or cumulative tax reduction that increases with income. The low relief effect of the tax reform at the lower end of the income distribution follows from the relatively high proportion of marginally employed persons (i.e., persons earning less than the minimum income threshold – around € 410 per month – for social insurance contributions; 1st decile 27 percent) and persons with taxable income below the basic individual tax allowance of € 11,000 (1st decile 100 percent, 2nd decile 88 percent, 3rd decile 2 percent). The former are usually not covered by social insurance and are therefore only eligible for the negative tax if they voluntarily pay social security contributions⁹; the latter benefit from the increase in the negative tax, but in many cases not to the extent that their net income increases by more than 1 percent. This explains why only 56 percent and 80 percent of employed persons are affected by the reform in the 1st and 2nd deciles respectively. In the 1st and 2nd deciles the average amount of relief is almost exclusively due to the increase in the negative tax. From the 3rd decile onward nearly all employed persons record net income gains resulting in particular from the reform of the income tax schedule. In the 4th to 9th deciles the positive effect as a percentage of net income is above average. The net income increase in the 10th decile is high in absolute terms but relatively low (+3.4 percent) when compared to the high average net income in that decile which is driven by a large variance at the upper end of the distribution¹⁰. Both the age of the employed population and the share of men increase with the amount of income from earnings and hence with the reform-induced income gain. The Gini coefficient, which is especially responsive to distributional changes in the middle-income range, remains virtually unchanged at 0.32 for employed persons, while the ratio between the average income of the top and bottom quintile (quintile ratio) rises from 5.5 to 5.6 and the income ratio between the top and the bottom decile (decile ratio) rises from 10.0 to 10.1¹¹.

To summarise, the vast majority of workers (92 percent) are affected by the wage and income tax reform, with annual simulated net income from earnings increasing by an average of € 997 or 3.8 percent as a result. In terms of absolute and relative net income, men and older employed individuals stand to benefit more than do women and younger employed persons.

Since income from pensions is generally lower than income from earnings, the absolute and relative net income gains for the majority of pensioners¹² are lower than

⁸ Only individuals who have been gainfully employed for at least six months according to the EU-SILC 2013 are considered "employed" (3.5 million individuals). In the EU-SILC income from self-employment includes income from forestry and farming, trade and commercial enterprises, freelance work, contract work, freelance employment and other types of self-employment.

⁹ In the simulation it is assumed that only employed individuals with an income above this marginal employment limit ("Geringfügigkeitsgrenze") pay social security contributions. In 2014, the share of marginally employed persons with voluntary health and pension insurance was 14 percent.

¹⁰ When the social security contribution ceiling is left at its original value in the simulation of tax reform, the result is a net relief of € 2,088 or 3.6 percent in the 10th decile. The new maximum tax rate of 55 percent, which applies to taxable income at or over € 1 million per year, has no effect in the simulation due to the lack of data on very high income in the EU-SILC.

¹¹ Without the marginally employed, the Gini coefficient is 0.30 in both scenarios, and the quintile ratio increases from 4.8 to 4.9. The decile ratio remains unchanged at 7.9.

¹² Only persons whose main activity was "pensioner" and who had positive income from pensions according to the EU-SILC 2013 for at least 6 months were taken into account (in each decile between 5 percent and

those in the group of employed persons (Table 3). Particularly in the 1st to 4th decile limited relief effects are seen (+0.8 percent to +1.2 percent). Up to the 3rd decile taxable income is on average below the basic individual allowance. In the 3rd and 4th deciles of the income distribution only a small number of pensioners experience an absolute net income gain of more than 1 percent. The disproportionately high share of women in the lower half of the distribution reflects their frequently discontinuous employment histories and low lifetime earnings (Böheim *et al.*, 2013, Felfe, 2012). Among pensioners the simulated elements of the tax reform result in a slight increase in income inequality, which is reflected in an increase in the Gini coefficient from 0.28 in the baseline scenario to 0.29 in the reform scenario, an increase in the quintile ratio from 4.3 to 4.4, and an increase in the decile ratio from 8.0 to 8.3. On average, 80 percent of people in this group experience a net income increase, the average amounting to +731 € or +3.0 percent. The income gains materialise for 71 percent of retired women and 90 percent of retired men.

Table 2: Distributional effects of the tax reform of 2015-16 for employed and self-employed persons

Average values, 2016

	Affected persons ¹ Percentage shares	Annual income after tax and social contributions			Age Years	Men In percent
		Baseline scenario ² In €	Change due to the tax reform			
		In €	In €	In percent		
1st decile	55.8	6,118	+ 163	+ 2.4	35.2	34.9
2nd decile	79.7	11,705	+ 233	+ 2.0	37.6	38.8
3rd decile	97.4	15,389	+ 423	+ 2.7	39.8	34.5
4th decile	99.9	17,989	+ 740	+ 4.1	37.6	46.2
5th decile	100.0	20,715	+ 958	+ 4.6	39.2	57.9
6th decile	100.0	23,609	+ 1,016	+ 4.3	39.1	61.2
7th decile	100.0	26,640	+ 1,239	+ 4.6	41.8	65.1
8th decile	100.0	30,304	+ 1,546	+ 5.1	42.3	68.0
9th decile	100.0	36,476	+ 1,701	+ 4.7	45.2	73.6
10th decile	99.8	61,685	+ 1,957	+ 3.4	48.4	82.1
Total	91.8	25,054	+ 997	+ 3.8	40.6	55.8
Women	88.7	19,966	+ 778	+ 3.6	41.3	0.0
Men	94.2	29,015	+ 1,168	+ 4.0	40.0	100.0
Under 40 years	91.1	20,584	+ 836	+ 3.7	28.8	59.2
Over 40 years	92.2	28,255	+ 1,113	+ 3.9	49.1	53.3

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. The sample comprises persons whose main activity for at least six months of the year was "employee" or "self-employed" and who have positive income. Number of observations: 5,324 (weighted number: 3.5 million.). – ¹ By definition, those individuals whose net income increases by at least 1 percent due to the tax reform of 2015-16. – ² The composition of deciles is based on the pre-reform distribution of individual net income (gross income net of social security contributions and income tax) in the baseline scenario in the year 2016 (Table 1).

4.2 Negative tax

Because women are overproportionately represented in the lower half of the income distribution (income from earnings and pensions, Tables 2 and 3), their reform-induced net income gain is significantly lower than that of men. For the same reason, the increase and extension of the negative tax has a greater effect on the net income of women. As shown in Table 4, among employees in the baseline scenario about one-fifth (22.7 percent) of women and 9.6 percent of men are entitled to a refund of part of their social insurance contributions. Assuming full utilisation of the negative tax, the simulated average refund for eligible men and women almost corresponds to the maximum amount of € 110 per year. Through the reform of the negative tax, the number of beneficiaries increases: 27.9 percent of women and 12.2 percent of men can expect a refund, which is nearly three times as high as that

9 percent were employed all year round). The following forms of income are considered "pension income" in the simulation: old age benefits, survivor benefits, private pension schemes and disability benefits.

in the baseline scenario and amounts to almost € 400 per year¹³. The majority of employees eligible for the negative tax live in households in the lowest third of the distribution of net household income (Table 5). 31.3 percent of employees in the 1st income tertile are eligible to apply for a tax credit. In the middle and upper income thirds, the corresponding figures are 18.2 percent and 7.4 percent. Eligible female employees in the middle and upper thirds of the net household income mostly work on a part-time basis.

Table 3: Distributional effects of the tax reform of 2015-16 for pensioners

Average values, 2016

	Affected persons ¹ Percentage shares	Annual income after income tax and social contributions		Age Years	Women In percent
		Baseline scenario ² In €	Change due to the tax reform In € In percent		
1st decile	45.0	4,901	+ 49 + 0.8	68.7	83.7
2nd decile	100.0	9,309	+ 110 + 1.2	67.0	81.1
3rd decile	8.7	11,651	+ 110 + 0.9	67.0	81.0
4th decile	23.4	13,919	+ 151 + 1.1	68.7	71.7
5th decile	89.5	15,877	+ 410 + 2.6	68.2	54.1
6th decile	99.2	17,690	+ 645 + 3.6	69.6	54.2
7th decile	100.0	20,079	+ 877 + 4.4	70.1	46.9
8th decile	99.7	22,899	+ 923 + 4.0	69.9	39.1
9th decile	100.0	26,597	+ 1,199 + 4.5	70.0	30.8
10th decile	100.0	38,839	+ 1,643 + 4.4	69.7	31.2
Total	80.1	20,250	+ 731 + 3.0	69.1	53.4
Women	71.3	16,744	+ 506 + 2.4	69.4	100.0
Men	90.1	24,271	+ 989 + 3.8	68.8	0.0

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. The sample comprises persons whose main activity for at least six months of the calendar year was "pensioner" and who had positive income from pensions. Number of observations: 2,936 (projected 1.8 million). – ¹ By definition those persons whose net income increases by at least 1 percent due to the tax reform of 2015-16. – ² The composition of deciles is based on the pre-reform distribution of individual net income (gross income net of social contributions and income tax) in the baseline scenario in the year 2016 (Table 1).

Table 4: Negative tax

Annual amount, average values, 2016

	Baseline scenario			Reform scenario		
	Negative tax in €	Eligible persons Percentage shares	Negative tax in €	Negative tax in €	Eligible persons Percentage shares	Negative tax in €
<i>Employees</i>						
Total	56	15.5	107	235	19.3	398
Women	78	22.7	107	314	27.9	398
Men	36	9.6	108	160	12.2	398
<i>Pensioners</i>						
Total	–	–	–	83	28.9	110
Women	–	–	–	106	42.3	110
Men	–	–	–	46	13.5	110

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. The sample comprises persons whose main activity for at least six months in the calendar year was "employee" or "pensioner" and who had positive income from earnings or pensions. Number of observations: 4,697 employees (weighted: 3.1 million) and 2,936 pensioners (weighted: 1.8 million). Assumption: complete utilisation of the negative tax (without consideration of the commuter allowance).

Through the extension of the negative tax to retired individuals, the simulation indicates that 28.9 percent of pensioners will be eligible after the tax reform goes into

¹³ As a larger proportion of women are entitled, the amount of the tax credit is on average (over all female employees) double that for men (baseline scenario: € 78 and € 36; reform scenario: € 314 and € 160, respectively).

effect (Table 4). The significantly skewed income distribution between male and female pensioners (Table 3) explains why 42.3 percent of all women, but only 13.5 percent of retired men are eligible to claim the negative tax (Table 4). Assuming full take-up of the negative tax in the reform scenario, eligible retired men and women will receive on average € 110 per year¹⁴.

Table 5: Share of employees who are eligible for the negative tax

	Total		Baseline scenario				Total		Reform scenario			
	Employed	Part-time employed	Women Employed	Women Part-time employed	Men Employed	Men Part-time employed	Employed	Part-time employed	Women Employed	Women Part-time employed	Men Employed	Men Part-time employed
			In percent						In percent			
Total	15.5	44.9	22.7	63.8	9.6	8.4	19.3	44.6	27.9	63.3	12.2	9.3
1st tertile	31.3	34.0	39.7	51.7	24.5	10.8	39.5	35.0	48.3	53.3	32.3	12.9
2nd tertile	18.2	51.8	30.4	67.2	8.2	5.9	22.1	49.9	36.4	65.6	10.5	6.1
3rd tertile	7.4	49.5	10.4	73.5	4.9	7.1	9.4	50.2	13.8	72.0	5.7	6.1

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. The sample comprises persons whose main activity for at least six months of the calendar year was "employee" and who have positive income from earnings. Number of observations: 4,697 employees (weighted: 3.1 million). Assumption: complete utilisation of negative tax (without consideration of the commuter allowance). The tertiles are formed by ordering the households based on the amount of their pre-reform equivalised disposable household income and dividing into three equally large groups of households. The individual weightings are calculated based on the EU scale.

4.3 Effects of the reform on household income

For distribution analyses the household level is relevant, among other reasons, because in addition to own income the individual standard of living usually also depends on the household context, in particular the overall sources of income of the household and the number and age of the household members. As the use of goods and resources can to a certain extent be shared between members (e.g., shared living space, household appliances, energy, cars), larger households benefit from economies of scale. To make households of different sizes and compositions comparable, household income is weighted by units of consumption, by dividing the total household income by a factor that depends on the household structure. Specifically, according to the EU scale (modified OECD scale), the first adult person in the household receives a weight (consumption equivalent) of 1, every additional person of at least 14 years of age receives a weight of 0.5 and each child under 14 years of age receives a weight of 0.3. In a household consisting of two adults and two small children with a total net household income of € 50,000 p.a. each member is assigned a net equivalised household income of $\frac{50,000}{1+0.5+0.3+0.3} = €23,810$. In single-person households, equivalisation is redundant as the household weight is 1.

To determine the distributional effects of the tax reform at the household level, all households in the sample are ranked according to the amount of their disposable equivalised household income and subsequently divided into deciles¹⁵. As Table 6 shows, the positive effect of the tax reform is generally higher, the higher the net household income is in the baseline scenario.

Among the 10 percent of households with the lowest equivalised income (1st decile) 23 percent have neither income from earnings nor a pension (Table 10). This share is 4 percent in the 2nd decile¹⁶. In the 1st decile, net household income only increases (by at least 1 percent) for 37.1 percent of households as a result of the reform, while in the 2nd decile it increases for 48.5 percent of households; of significance here are the relatively low employment intensity and low employment and pension income in

¹⁴ On average over all pensioners (also those not entitled), the negative tax amounts to € 106 p.a. for women and € 46 p.a. for men.

¹⁵ Social benefits to prevent social exclusion, housing subsidies, unemployment benefits and unemployment assistance are not simulated, but instead adopted from the EU-SILC data.

¹⁶ The data exclusively include individuals in private households, not persons in institutions (e.g., old people's homes, orphanages, psychiatric institutions) or without a permanent residence (e.g. homeless). As a result, incomes at the lower end of the distribution tend to be over-estimated.

these households. While net household income in the 1st and 2nd decile increases by 1.1 percent and 1.9 percent respectively, in the 7th to 9th decile the net gains range from 3.8 percent to 4.0 percent. In the upper-most decile, income gains are the highest in absolute but not in relative terms (i.e., in relation to the average income in that decile)¹⁷.

The distribution of selected household characteristics across the income deciles (Table 10) offers an indication of which types of households tend to benefit in an above-average or below-average way from the simulated tax reform. The following household characteristics correlate positively with the amount of net household income: couple households (share of couple households in the 1st decile is 39.5 percent, while it is 68.4 percent in the 10th decile); households with male or female main earners¹⁸ that are full-time workers (1st decile 23.2 percent, 10th decile 75.8 percent), employees (1st decile 17.5 percent, 10th decile 45.1 percent) or civil servants (1st decile 1.5 percent, 10th decile 14.7 percent). For the other characteristics there is no clear connection to the distribution of income and amount of income¹⁹. Households with children are more represented between the 2nd and 6th deciles of the household equivalised income. Households with a main earner who is retired are over-represented in the 2nd to 7th deciles. Self-employed main earners can mainly be found in the 1st to 3rd and the 10th income deciles, while the share of households with blue-collar workers as the main earners is highest in the 3rd to 8th deciles.

For the total sample, the average increase in yearly net equivalised household income is € 834 or 3.1 percent. 84.6 percent of households experience an increase in net household income of at least 1 percent. Not equivalised, i.e., not adjusted for household structure, the average yearly net household income in the baseline scenario is € 38,929 and increases by € 1,314 as a result of the reform.

Table 6: Distributional effects of the tax reform of 2015-16 for all households

Average values, 2016

	Affected households ¹ Percentage shares	Annual equivalised disposable household income		
		Baseline scenario ² In €	Change due to the tax reform In €	In percent
1st decile	37.1	6,894	+ 97	+ 1.1
2nd decile	48.5	13,044	+ 249	+ 1.9
3rd decile	84.2	16,285	+ 452	+ 2.8
4th decile	92.7	18,838	+ 636	+ 3.4
5th decile	95.2	21,275	+ 749	+ 3.5
6th decile	97.3	23,749	+ 842	+ 3.5
7th decile	97.4	26,642	+ 1,013	+ 3.8
8th decile	97.4	30,182	+ 1,195	+ 4.0
9th decile	98.3	35,609	+ 1,373	+ 3.9
10th decile	97.6	54,497	+ 1,732	+ 3.3
Total	84.6	24,699	+ 834	+ 3.1

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. Number of observations: 5,976 households (weighted: 3.7 million). – ¹ By definition, those households whose equivalised disposable household income increases by at least 1 percent due to the tax reform of 2015-16. – ² The composition of the deciles is based on the pre-reform distribution of equivalised disposable household income (gross income of all household members net of social contributions, income tax and transfers) in the baseline scenario in the year 2016. The household incomes are equivalised (adjusted for household structure) using the EU scale.

¹⁷ If the social security contribution ceiling is left at its original value in the simulation, the equivalised net household income increases by 3.8 percent in the 7th decile, 4.0 percent in the 8th and 9th deciles and 3.4 percent in the 10th decile. The share of households with at least one person with an income above the contribution ceiling is 6 percent in the 7th decile, 12 percent in the 8th decile, 20 percent in the 9th decile and 72 percent in the 10th decile.

¹⁸ In EU-SILC the person who achieves the highest income in the household.

¹⁹ Other household characteristics that may correlate more strongly with the level of income cannot be discussed in detail here.

4.3.1 Households with and without children

As Table 7 shows, households with children benefit from the tax reform *ceteris paribus* to the same extent as households without children²⁰. Since an above-average number of pensioner households belongs to the group of households without children, the latter are excluded to determine the income effects of the tax reform in Table 7²¹. It turns out that the net income effects of the tax reform at the household level depend less on the presence of children than on cohabitation with a partner. Couple households have a higher net equivalised income than single-person households. Since the reform-induced net income gain not only increases with individual taxable income, but also with the number of taxpayers in the household, the relative net household income in couple households increases more significantly than that in single-person households – regardless of the presence of children in the household. Due to their low income, more than one third of all single parent households are unaffected by the reform.

Table 7: Effects of the tax reform of 2015-16 for households with and without children

Average values, 2016

	Affected households ¹ Percentage shares	Annual equivalised disposable household income		
		Baseline scenario ² In €	Change due to the tax reform In €	In percent
All households				
With children	87.3	23,178	+ 763	+ 3.1
Without children	83.6	26,853	+ 927	+ 3.1
Couple households	91.8	26,850	+ 930	+ 3.3
With children	91.1	24,102	+ 818	+ 3.3
Without children	93.0	31,379	+ 1,113	+ 3.4
Single-person households	76.1	23,103	+ 757	+ 2.8
With children	66.8	18,168	+ 465	+ 2.2
Without children	77.8	24,037	+ 812	+ 2.9

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. Not including households with pensioners. – ¹ By definition, those households whose equivalised disposable household income increases by at least 1 percent due to the tax reform of 2015-16. – ² The composition of deciles is based on the pre-reform distribution of equivalised disposable household income (gross income of all household members net of social contributions, income tax and transfers) in the baseline scenario in the year 2016. The household incomes are equivalised (adjusted for household structure) using the EU scale.

4.3.2 Income inequality

Measured by the Gini coefficient, the inequality of the distribution of simulated equivalised net household income through the income tax reform remains virtually unchanged at 0.28²². The relation between the average income of the highest quintile of the distribution and that of the lowest quintile increases slightly from 6.4 to 6.5 and that between the upper-most and the lowest deciles from 11.3 to 11.5. Since the equivalised national median income in Austria increases (Table 6), the poverty threshold (60 percent of the equivalised median income) also rises and, given that the amount of tax relief increases with net income, more people have income below the poverty threshold. Thus, the simulated at-risk-of-poverty rate (by definition) increases from 14.7 percent to 15.3 percent in 2016.

²⁰ Children are defined as persons under 16 and persons under 25 who live with at least one parent and are not gainfully employed. This definition conforms to the 2012 requirements for family benefits in Austria (*Statistics Austria, 2014A*).

²¹ The inclusion of pensioners households would reduce the average household income of households without children significantly. Hence, the difference between the tax reform effects for households with and without children would be determined less by the presence of children than by the lower average household income in (childless) pensioner households.

²² Specifically, the Gini coefficient for equivalised disposable household income measured at the household level increases from 0.282 to 0.284. The Gini coefficient based on per capita non-equivalised household disposable income remains at 0.34.

4.4 Effects of the reform on wage and income tax revenue

The simulation model shows a reform-induced loss of wage and income tax revenue of € 4.94 billion, without taking into account delays in implementation. Of this, 85 per cent can be attributed to the change in the income tax rate schedule (€ 4.20 billion), 7 per cent (€ 0.36 billion) to the increase and extension of the negative tax and 5 per cent (€ 0.24 billion) to the increase in the child tax allowance²³. More than half of the shortfall (55.7 per cent) is the result of the loss of fiscal revenue from households in the top third of the distribution of equivalised net household income (2nd tertile 32.3 per cent, 1st tertile 12.0 per cent)²⁴. About three quarters of the shortfall are the result of the tax relief of employed persons and a quarter that of pensioners. 46.3 per cent of the loss of fiscal revenue due to the change in the negative tax accrues to the lower, 35.2 per cent to the middle and 18.5 per cent to the upper third of the income distribution (Table 8).

Table 8: Simulation of tax relief resulting from the tax reform of 2015-16

Average values, 2016

	Overall wage and income tax reform		Income tax rate schedule reform		Extension of negative tax		Increase in child tax allowance	
	Billion €	Percentage shares	Billion €	Percentage shares	Billion €	Percentage shares	Billion €	Percentage shares
Total	4.94	100.0	4.20	100.0	0.36	100.0	0.24	100.0
1st tertile	0.60	12.0	0.38	9.1	0.17	46.3	0.05	20.6
2nd tertile	1.59	32.3	1.30	31.0	0.13	35.2	0.10	42.7
3rd tertile	2.75	55.7	2.52	59.9	0.07	18.5	0.09	36.7

Source: WIFO microsimulation with weighted and projected data from the EU-SILC 2013. Number of observations: 5,976 households (weighted: 3.7 million). The composition of the tertiles is based on the pre-reform distribution of equivalised disposable household income (gross income of all household members net of social contributions, income tax and transfers) in the baseline scenario in the year 2016. The household incomes are equivalised (adjusted for household structure) using the EU scale.

Table 9: Disposable household income

Non-equivalised, average values, 2016

	Baseline scenario		Reform scenario		Change due to the tax reform	
	Billion €	Percentages shares	Billion €	Percentages shares	Billion €	In percent
Total	144.07	100.0	148.94	100.0	+ 4.86	+ 3.4
1st tertile	23.93	16.6	24.53	16.5	+ 0.60	+ 2.5
2nd tertile	44.89	31.2	46.48	31.2	+ 1.59	+ 3.5
3rd tertile	75.25	52.2	77.92	52.3	+ 2.67	+ 3.6

Source: WIFO microsimulation with weighted and projected data from EU-SILC 2013. Number of observations: 5,976 households (weighted: 3.7 million). The composition of the tertiles is based on the pre-reform distribution of equivalised disposable household income (gross income of all household members after social contributions, income tax and transfers) in the baseline scenario in the year 2016. The household incomes are equivalised (adjusted for household structure) using the EU scale.

The simulated aggregate net household income increases by € 4.86 billion or 3.4 per cent (Table 9)²⁵. In the baseline scenario, one third of households with the lowest equivalised net household income (1st tertile) holds 16.6 per cent of aggregate net household income. The share of income held by the middle tertile is almost twice as

²³ If both parents can claim the allowance, utilisation by both parents is assumed in the simulation. The assumption is that the child tax allowance doubles when claimed by both parents (Table 1).

As mentioned, the reform in the area of the negative tax is only simulated for the group of employees and pensioners.

²⁴ The tertiles are formed by ranking the households according to their level of equivalised disposable household income and dividing them into three groups with the same number of households. The tertile boundaries are € 18,419 and € 27,130.

²⁵ The difference between the loss of fiscal wage and income tax revenue (€ 4.94 billion) and the additional net household income (€ 4.86 billion) amounts to the increased social insurance contributions resulting from the raising of the contribution ceiling.

high (31.2 percent), while the income share in the top tertile amounts to 52.2 percent. Although the net household income in the 2nd and 3rd tertiles shows an above-average increase as a result of the simulated tax reform (+3.5 percent and +3.6 percent), the distribution of income at this level of aggregation only changes slightly in favour of the upper and at the expense of the lower tertile (by 0.1 percentage point).

5. Summary

In this paper, the ex ante evaluation of the distribution and revenue effects of the 2015-16 income tax reform were analysed using the WIFO microsimulation model. In particular, the simulation comprises the following aspects of the reform: the change in the income tax rate, the increase and extension of the negative tax, the increase in the child tax allowance, the change in the employee and traffic tax credits, as well as the increase in the social security contribution ceiling. Assuming full utilisation of the negative tax, the results indicate a fiscal loss of wage and income tax revenue of € 4.94 billion, of which 85 percent (€ 4.20 billion) can be attributed to the changes in the income tax rate schedule, 7 percent (€ 0.36 billion) to the changes in the area of negative tax and 5 percent (€ 0.24 billion) to the increase in the child tax allowance. More than half (55.7 percent) of the fiscal loss of revenue results from the tax relief of households in the upper third of the distribution of equivalised net household incomes, while 32.3 percent and 12.0 percent are attributable to the middle and lower tertiles, respectively.

Table 10: Household characteristics

Average values, 2016

	Affected households ¹	Annual equivalised disposable household income			Age ²	Couple households	Households with children	Household size	No earnings or income from pension	Main earner ³								
		Baseline scenario ⁴	Change due to tax reform 2015-16	In percent						Years	Percentage shares	Persons	Percentage shares	Self-employed	Labourers	Regular employees	Civil servants	Other professions ⁵
	Percentage shares	In €	In €	In percent	Years	Percentage shares	Persons	Percentage shares		Percentage shares				Percentage shares				
1st decile	37.1	6,894	+ 97	+ 1.1	44.1	39.5	25.6	2.0	22.8	6.1	2.8	17.5	1.5	9.1	22.7	12.2	10.0	23.2
2nd decile	48.5	13,044	+ 249	+ 1.9	49.2	43.3	31.8	2.2	3.6	5.2	4.5	15.5	1.6	9.5	41.1	3.5	9.9	27.9
3rd decile	84.2	16,285	+ 452	+ 2.8	47.6	52.3	33.0	2.3	2.3	5.5	10.5	13.5	5.4	14.2	35.3	1.3	9.3	42.9
4th decile	92.7	18,838	+ 636	+ 3.4	47.9	53.1	34.4	2.4	1.1	2.7	10.2	17.4	3.9	14.7	37.2	1.0	6.1	47.0
5th decile	95.2	21,275	+ 749	+ 3.5	47.1	54.5	34.4	2.4	0.3	3.5	10.1	23.5	6.2	13.2	33.6	0.5	4.9	56.7
6th decile	97.3	23,749	+ 842	+ 3.5	46.9	58.2	31.1	2.4	0.2	3.1	11.9	25.9	9.1	8.7	28.9	1.3	5.9	57.4
7th decile	97.4	26,642	+ 1,013	+ 3.8	48.4	60.2	28.0	2.3	0.0	2.8	8.5	29.0	10.4	7.9	32.3	1.5	3.5	59.6
8th decile	97.4	30,182	+ 1,195	+ 4.0	46.8	60.3	26.7	2.3	0.0	3.5	11.5	34.2	13.2	4.2	26.2	0.2	3.4	66.3
9th decile	98.3	35,609	+ 1,373	+ 3.9	49.3	65.2	18.5	2.2	0.0	2.2	8.2	35.8	15.2	3.9	25.1	0.4	4.1	65.4
10th decile	97.6	54,497	+ 1,732	+ 3.3	49.4	68.4	19.9	2.2	0.2	4.5	1.8	45.1	14.7	2.3	17.6	0.2	2.6	75.8
Total	84.6	24,699	+ 834	+ 3.1	47.7	55.5	28.3	2.3	3.0	3.9	8.0	25.7	8.1	8.8	30.0	2.2	6.0	52.2

Source: WIFO microsimulation with weighted and projected data from EU-SILC 2013. Number of observations: 5,976 households (weighted: 3.7 million). – ¹ By definition those households whose equivalised disposable household income increases by 1 percent due to the 2015-16 tax reform. – ² Sum of the ages of household members in years divided by the number of household members. – ³ According to EU-SILC the household member with the highest individual income in the household. – ⁴ The composition of the deciles is based on the pre-reform distribution of equivalised disposable household income (gross income of all household members after social contributions, income tax and transfers) in the baseline scenario in the year 2016. The household incomes are equivalised (adjusted for household structure) using the EU scale. – ⁵ Labourers, contract workers and freelance employees.

Generally, the net income gain due to the tax reform is higher in absolute and in percentage terms the higher the pre-reform net income is. This holds true for the net income of employed persons and pensioners as well as for the equivalised disposable household income. This relief pattern is explained by the workings of the progressive tax bracket system. In particular, by reducing rates in the lower tax brackets even high income earners benefit because the individual tax liability is calculated as the sum of the tax owed in the individual taxable income brackets. For taxable in-

comes that cover several progression stages the reduction in tax rates across multiple brackets *ceteris paribus* results in a cumulative advantage or cumulative tax reduction that increases with income.

The highest income gains in relative terms are recorded in households in the 7th to 9th deciles of the distribution of net household income. In the upper half of the distribution almost all households benefit from the reform, while in the 1st and 2nd deciles the majority of households are not affected, because many households have little or no income from earnings or pensions. On average, the equivalised annual net household income increases by € 834 or 3.1 percent. Non-equivalised, i.e., not adjusted for household structure, the average annual net household income increases by € 1,314 as a result of the reform. As the simulation results also show, households with and without children benefit to a similar extent from the reform. Various distribution measures point towards a slight increase in the inequality of the income distribution.

The results presented here can only adequately consider the short-run effects of the income tax reform. In the medium run the distributional effects of the tax reform will be determined by the specific configuration and effectiveness of counter-financing measures, the effect of bracket creep and the behavioural responses of those affected.

6. References

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