
INFLATION AND GOVERNMENT RESPONSE – DISTRIBUTIONAL IMPACT ON AUSTRIAN HOUSEHOLDS

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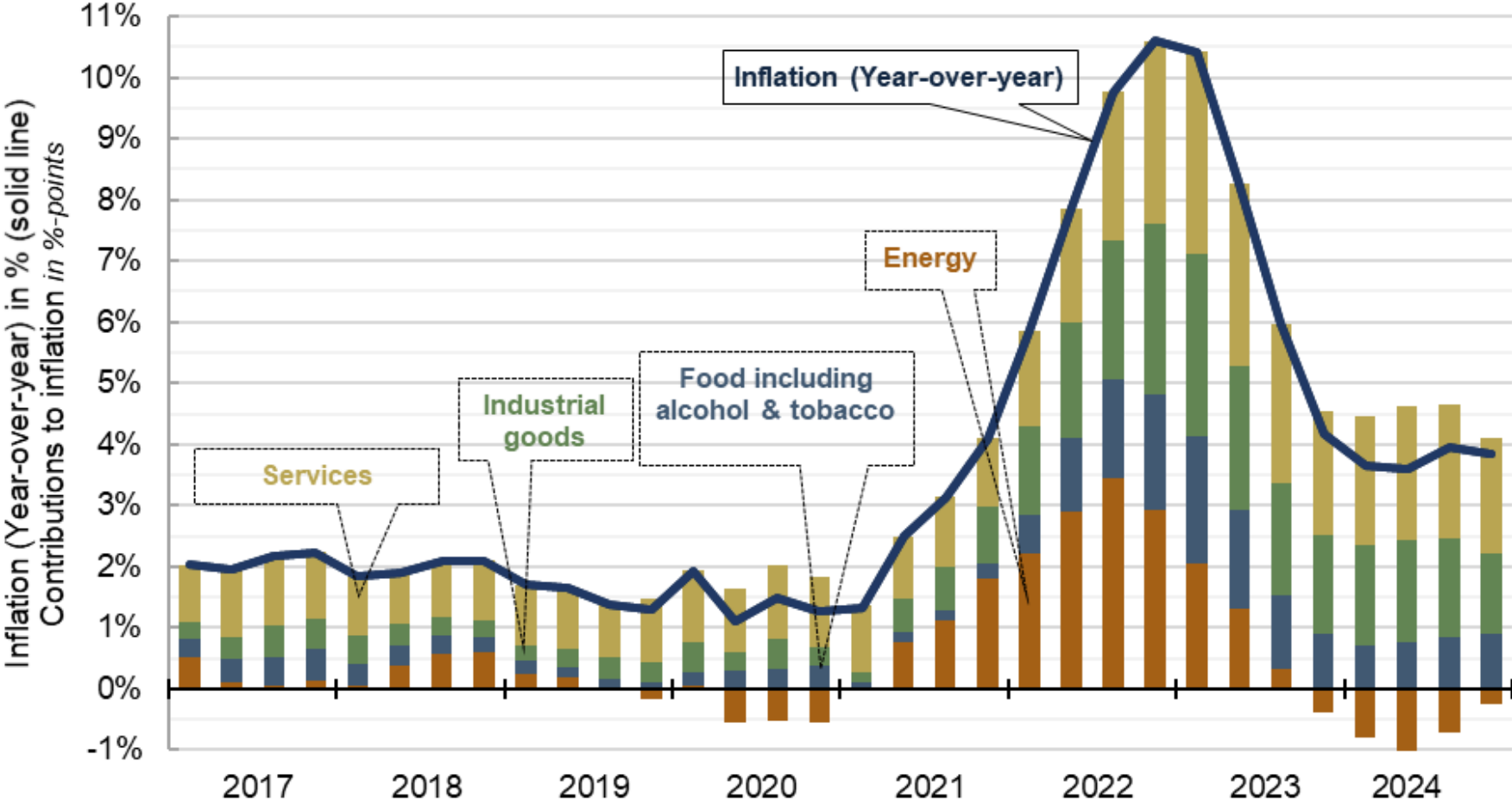
Overview

- Impact of inflation and measures by the government in response on Austrian households in 2022 to 2024:
 - Based on macroeconomic forecast from March 2023 and measures taken until May 2023
 - Simulated measures targeted at households amount to 1.3 % - 1.5 % of GDP
- Main results:
 - Relative to income, relief is higher in the lower deciles of the income distribution
 - high variance across households with similar income
 - Burden of inflation higher for low-income households
 - primarily due to higher average propensity to consume
 - Relief high enough to compensate lower income households on average (!) for their higher cost of consumption in 2022
 - From 2023, nominal increases of wages and pensions become more relevant compared to government measures
 - on average not enough to cover for higher cost of consumption at the bottom of the distribution

Methodology

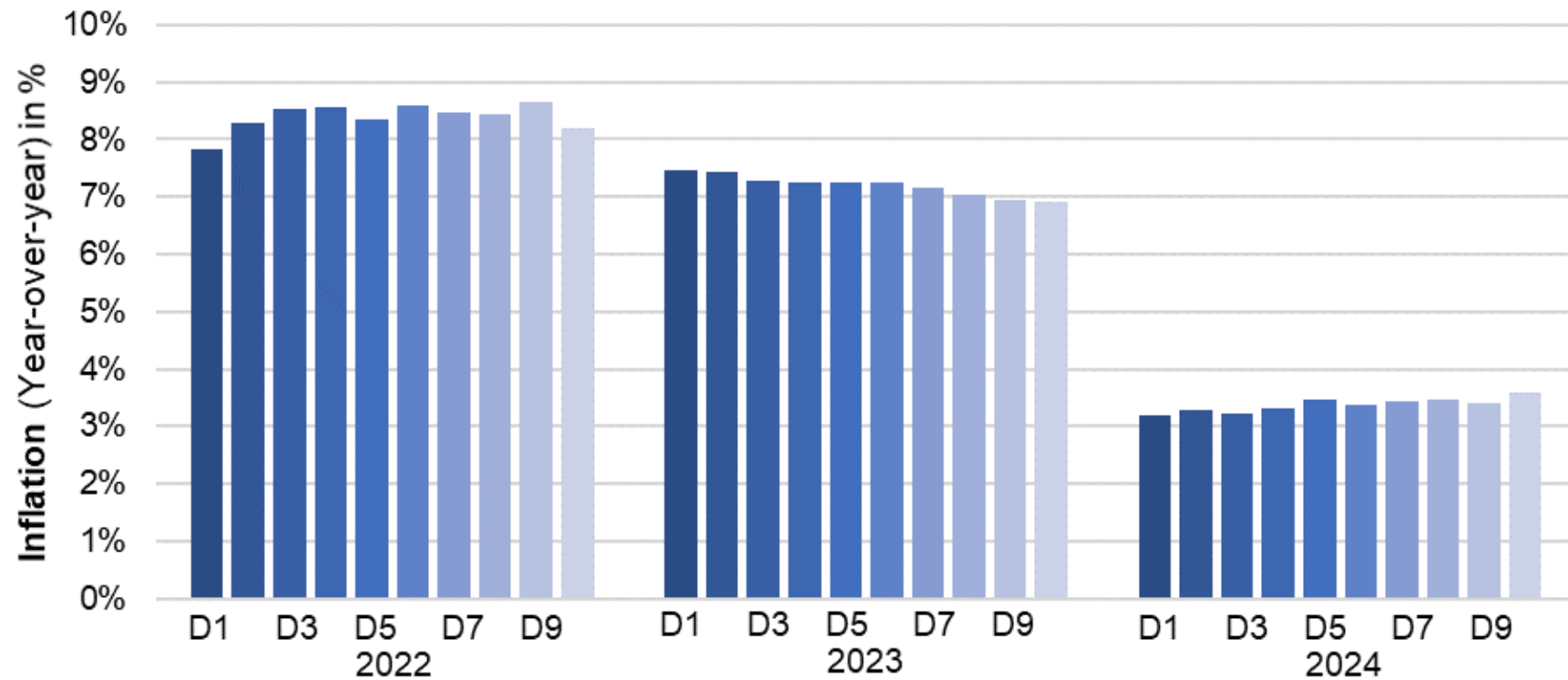
- EUROMOD microsimulation model based on EU-SILC data
- Statistically matched with consumption data from household budget survey
- Income and transfers are updated and weights of households calibrated according to macroeconomic forecast
- Classify households by deciles of equivalized disposable income

Rising inflation rates since 2021...



...with some heterogeneity across income groups

- Higher fuel costs in 2022 less relevant for bottom deciles
- Higher food inflation in 2023 more relevant for bottom deciles



Government response – relief for households

- Simulated measures for households (legislated or proposed until May 2023)

	2022		2023		2024	
	in % of GDP	<i>share in category</i>	in % of GDP	<i>share in category</i>	in % of GDP	<i>share in category</i>
Total	1.40		1.31		1.49	
Type of measure						
Transfer measures	0.97	69%	0.36	28%	0.25	17%
Tax measures	0.40	29%	0.51	39%	1.10	74%
Subsidy measures	0.03	2%	0.43	33%	0.14	10%
Means-testing						
Means-tested measures	0.36	26%	0.30	23%	0.07	5%
Non-means-tested measures	1.04	74%	1.01	77%	1.42	95%
Permanent or temporary						
Permanent Measures	0.01	1%	0.46	35%	1.28	86%
Temporary Measures	1.38	99%	0.84	65%	0.21	14%

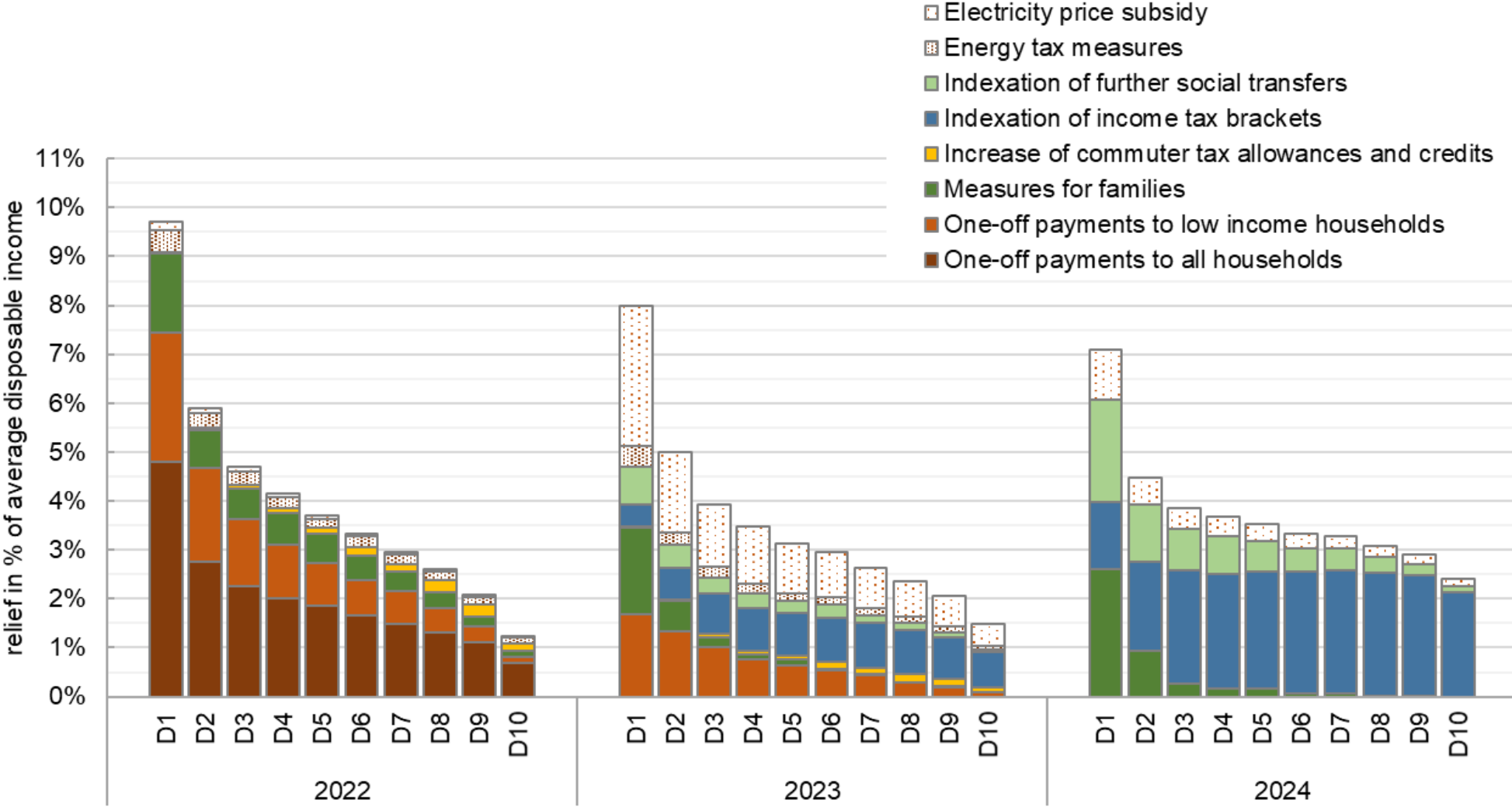
Distributional effects of relief

- Effect on households across deciles of equivalized income
- Allocation across deciles in **absolute terms** (2022 to 2024): increasing with income in total
 - especially due to indexation of income tax brackets from 2023
 - whereas lower income households benefit more from measures targeted at them and at families
- **Relative to disposable income** average relief is decreasing with income
 - measures in total are progressive
- Significant **heterogeneity** across households within deciles
 - especially at the bottom of the distribution

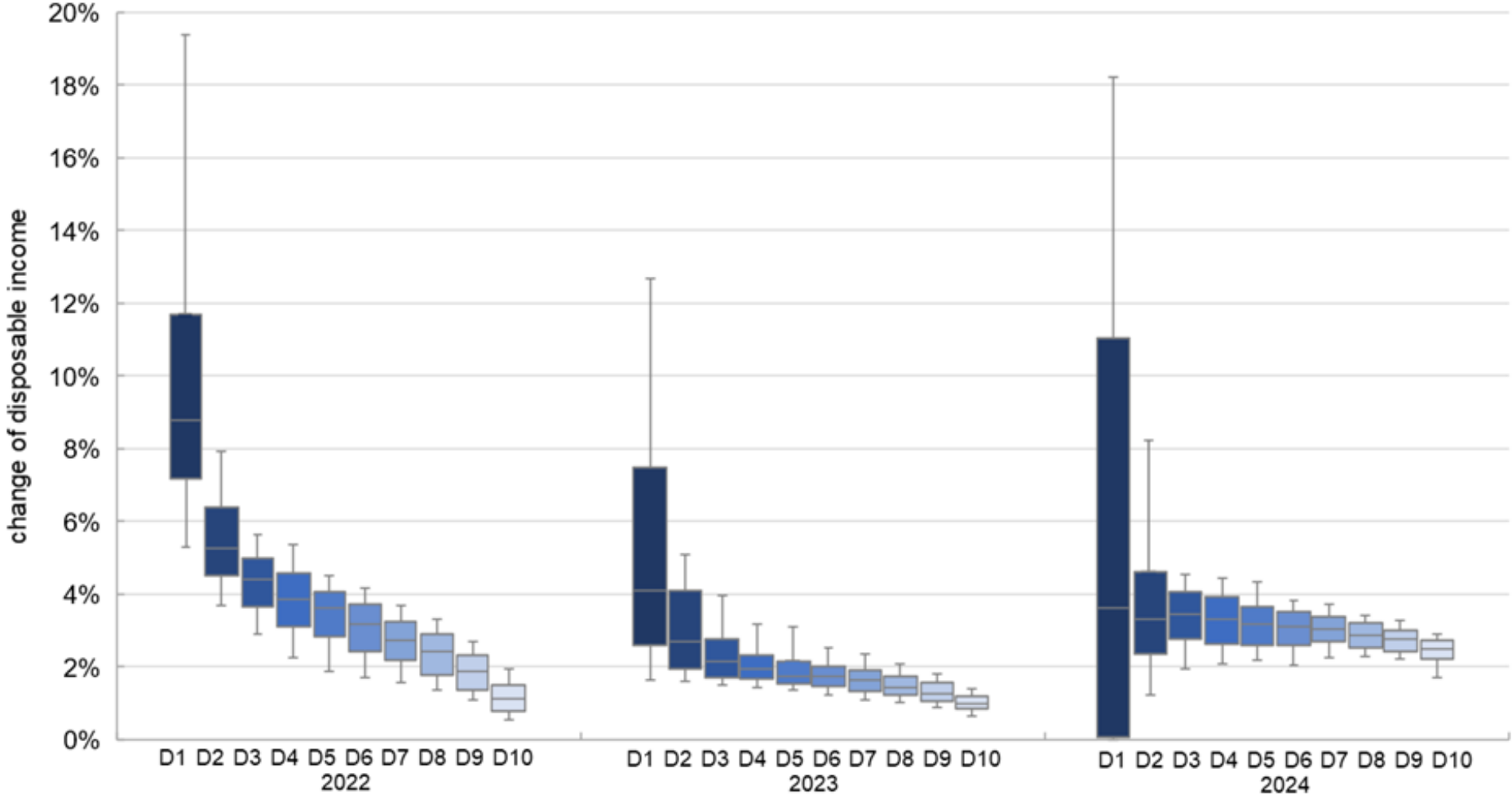
Allocation of relief volume 2022 - 2024

		Deciles of disposable income									
	Total	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
<i>relief volume in million EUR</i>		<i>share of the relief volume in %</i>									
All measures for private households	20,130	8%	9%	9%	9%	9%	10%	10%	11%	11%	12%
Income support	16,440	8%	9%	9%	9%	9%	10%	10%	11%	11%	13%
<i>One-off payments to all households</i>	<i>3,180</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>9%</i>
<i>One-off payments to low income households</i>	<i>2,730</i>	<i>12%</i>	<i>17%</i>	<i>14%</i>	<i>12%</i>	<i>10%</i>	<i>9%</i>	<i>9%</i>	<i>7%</i>	<i>6%</i>	<i>4%</i>
<i>Measures for families</i>	<i>1,290</i>	<i>27%</i>	<i>17%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>7%</i>	<i>7%</i>	<i>5%</i>	<i>4%</i>	<i>3%</i>
<i>Increase of commuter tax allowances and credits</i>	<i>540</i>	<i>0%</i>	<i>2%</i>	<i>4%</i>	<i>5%</i>	<i>6%</i>	<i>11%</i>	<i>12%</i>	<i>19%</i>	<i>20%</i>	<i>22%</i>
<i>Indexation of income tax brackets</i>	<i>7,410</i>	<i>2%</i>	<i>5%</i>	<i>7%</i>	<i>8%</i>	<i>9%</i>	<i>10%</i>	<i>12%</i>	<i>13%</i>	<i>15%</i>	<i>20%</i>
<i>Indexation of further social transfers</i>	<i>1,290</i>	<i>13%</i>	<i>13%</i>	<i>11%</i>	<i>12%</i>	<i>11%</i>	<i>10%</i>	<i>9%</i>	<i>8%</i>	<i>7%</i>	<i>5%</i>
Price reduction	3,690	10%	10%	10%	10%	9%	10%	10%	10%	10%	11%
<i>Energy tax measures</i>	<i>780</i>	<i>8%</i>	<i>9%</i>	<i>10%</i>	<i>9%</i>	<i>9%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>11%</i>	<i>14%</i>
<i>Electricity price subsidy</i>	<i>2,910</i>	<i>11%</i>	<i>11%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>10%</i>	<i>11%</i>

Relief relative to equivalised disposable income



Heterogeneity of income support

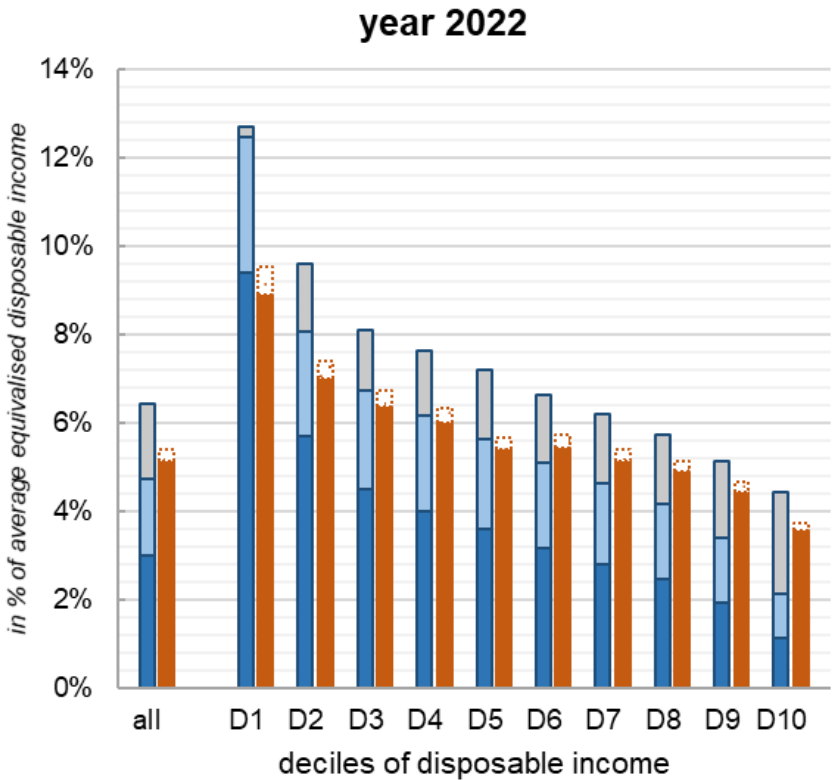
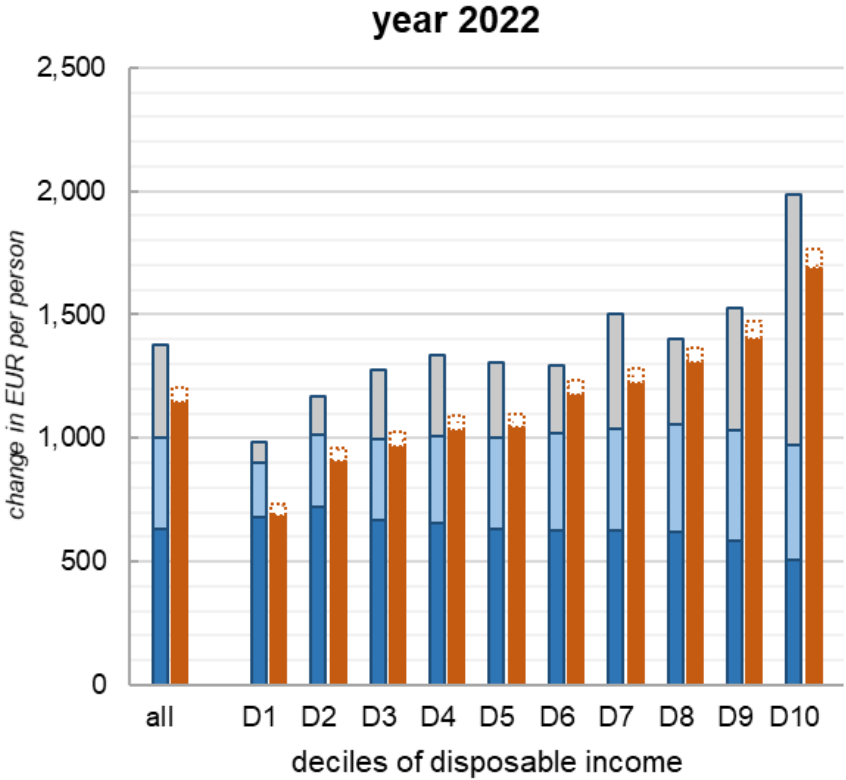


Change of income and expenditure since 2021

- Is nominal income growth enough to cover the additional expenditure?
- Counterfactual: income and expenditure grow by 2 % annually
- Three sources of higher net income:
 - Government response to inflation as shown above
 - Eco-social tax reform legislated in early 2022 (lower income tax rates, higher tax credits)
 - Other reasons (e.g. wage and pension increases)
- Burden of inflation:
 - Calculated on the household level
 - Aggregated in deciles of income distribution and expressed in EUR per person or relative to disposable income
 - Counterfactual burden without price reducing measures is shown additionally
- Interpretation: if additional income = inflation burden
 - → households can on average cover the additional expenditure (without changing consumption pattern)
 - → nominal savings are unchanged, but real savings fall due to inflation

Change of income and expenditure since 2021

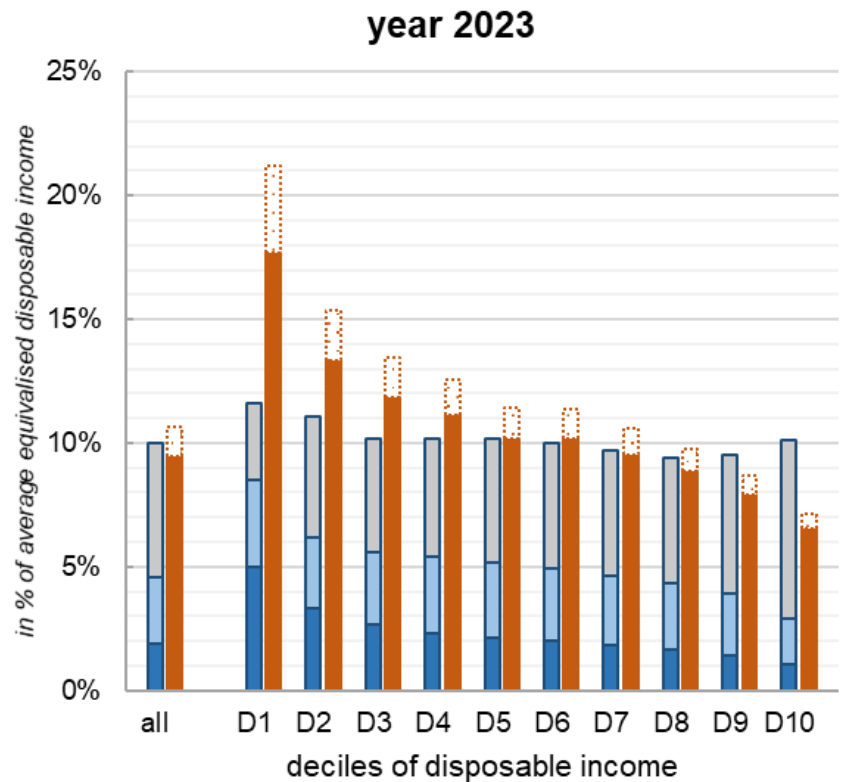
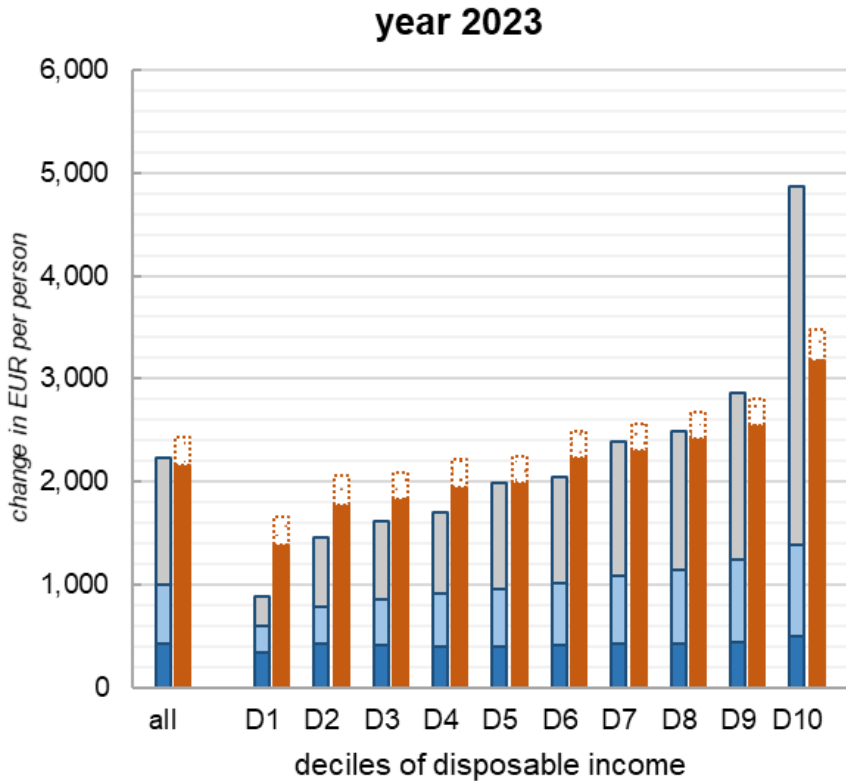
- After subtraction of 2 % annual growth of income and expenditure



- other income changes
- eco-social tax reform
- inflation relief
- ⋯ price reduction
- inflation burden

Change of income and expenditure since 2021

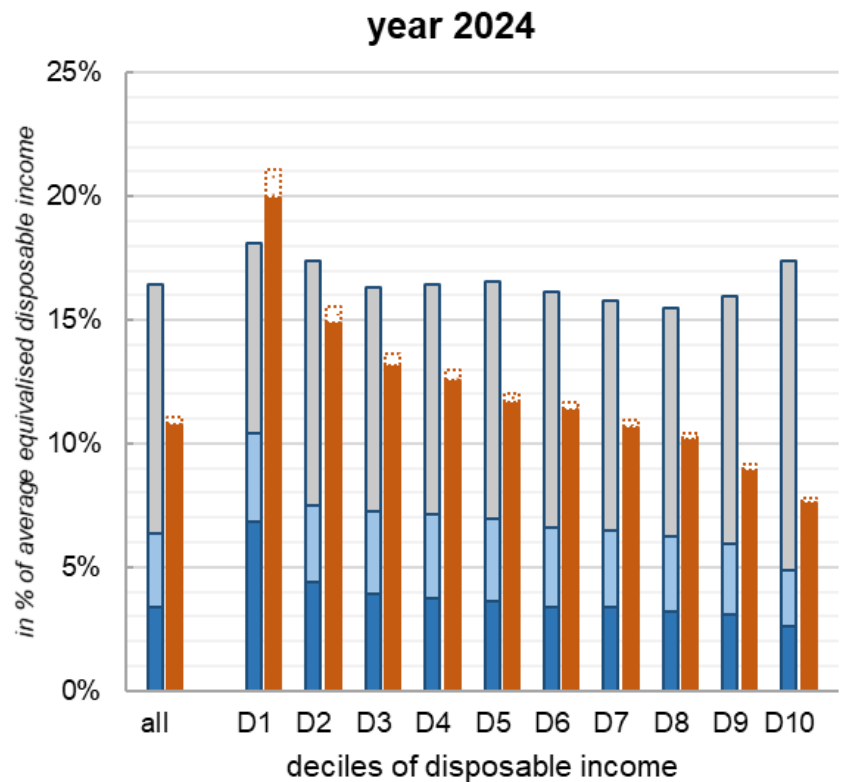
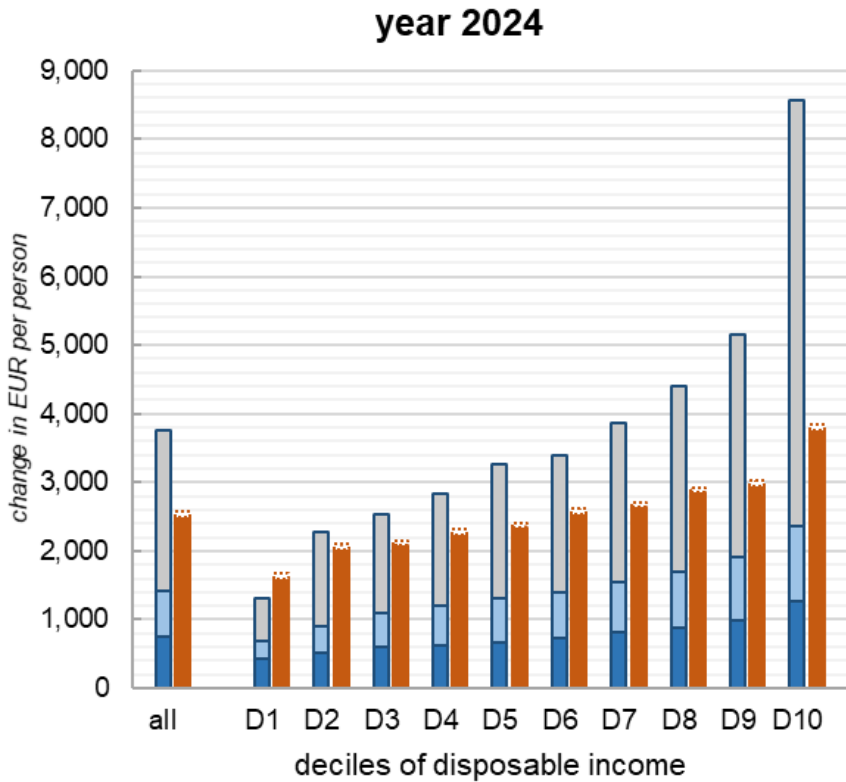
- After subtraction of 2 % annual growth of income and expenditure



- other income changes
- eco-social tax reform
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Change of income and expenditure since 2021

- After subtraction of 2 % annual growth of income and expenditure



- other income changes
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- inflation relief
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Decomposition of inflation burden

- What drives differences of inflation burden across deciles?
 - Calculate burden applying same average inflation rate to all households („**effect of average inflation**“). Resulting burden is proportional to average propensity to consume. Explains most of the variation across deciles.
 - Calculate burden of each households with their consumption basket and the respective inflation rates („**idiosyncratic inflation**“)
 - „**Changes in population**“ is the residual due to reweighting of households and possible switching of households between deciles.

	Total population	Deciles of disposable income											
		D1	D2	D3	D4	D5	D6	D7	D8	D9	D10		
Year 2023	Burden of inflation since 2021 (in excess of 2% p.a.), in % of disposable income												
Total burden	9.5	17.7	13.3	11.8	11.1	10.2	10.2	9.5	8.8	7.9	6.6		
<i>Effect of average inflation</i>	9.5	17.9	13.1	11.5	11.0	10.1	9.9	9.3	9.1	8.1	6.8		
<i>Effect of idiosyncratic inflation</i>	0.0	-0.5	0.3	0.1	0.2	0.0	0.2	0.0	-0.1	-0.1	-0.3		
<i>Effect of changes in population</i>	0.0	0.2	-0.1	0.2	-0.1	0.1	0.1	0.1	-0.2	-0.1	0.1		
		Deviation from total population, in percentage points										mean absolute deviation	standard deviation
Total burden		8.2	3.8	2.3	1.6	0.7	0.7	0.0	-0.7	-1.6	-2.9	2.3	3.0
<i>Effect of average inflation</i>		8.4	3.6	2.0	1.5	0.6	0.4	-0.2	-0.4	-1.4	-2.7	2.1	2.9
<i>Effect of idiosyncratic inflation</i>		-0.4	0.4	0.2	0.3	0.0	0.3	0.1	-0.1	0.0	-0.3	0.2	0.2
<i>Effect of changes in population</i>		0.2	-0.1	0.2	-0.1	0.1	0.0	0.1	-0.2	-0.1	0.1	0.1	0.1

Thank you for your attention

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Appendix: Underlying macro forecast

- Calibration based on WIFO macroeconomic forecast from March 2023

	2019	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
	index (2019=100)						change (year-over-year in %)				
real GDP	100.0	93.5	97.8	102.7	103.0	104.8	-6.5	+4.6	+5.0	+0.3	+1.8
nominal GDP	100.0	95.9	102.3	112.7	121.0	128.4	-4.1	+6.6	+10.2	+7.4	+6.1
consumer prices	100.0	101.4	104.2	113.2	121.2	125.8	+1.4	+2.8	+8.6	+7.1	+3.8
indexation of income tax brackets	100.0	100.0	100.0	100.0	105.2	115.4	0.0	0.0	0.0	+5.2	+9.7
average annual wage	100.0	102.2	104.8	109.6	118.5	127.5	+2.2	+2.5	+4.6	+8.1	+7.7
indexation of pensions	100.0	101.8	103.3	105.2	111.3	121.7	+1.8	+1.5	+1.8	+5.8	+9.4
population	100.0	100.4	100.8	101.8	102.6	103.2	+0.4	+0.4	+1.0	+0.8	+0.6
employed	100.0	98.0	100.4	103.3	104.2	105.5	-2.0	+2.5	+3.0	+0.8	+1.3
unemployed	100.0	135.9	110.1	87.3	89.3	86.0	+35.9	-19.0	-20.7	+2.3	-3.7
pensioners	100.0	103.1	104.8	106.1	107.4	109.0	+3.1	+1.7	+1.2	+1.3	+1.4

Appendix: Simulated measures

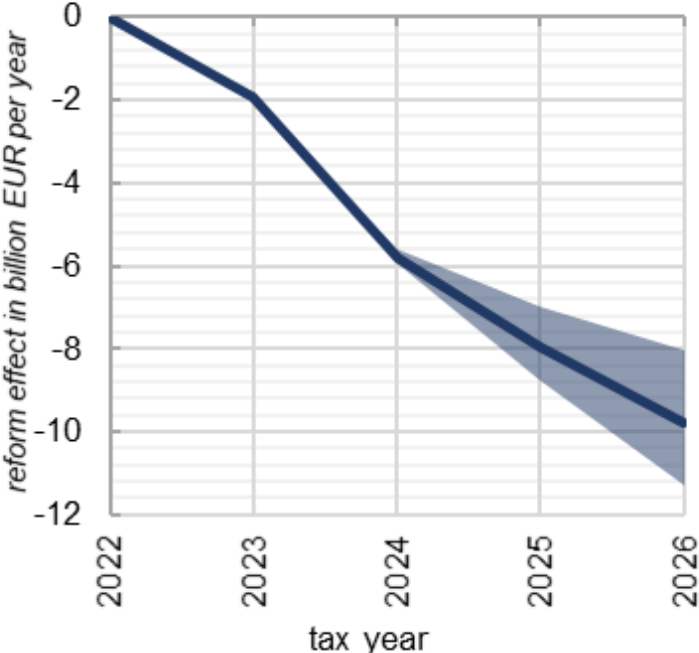
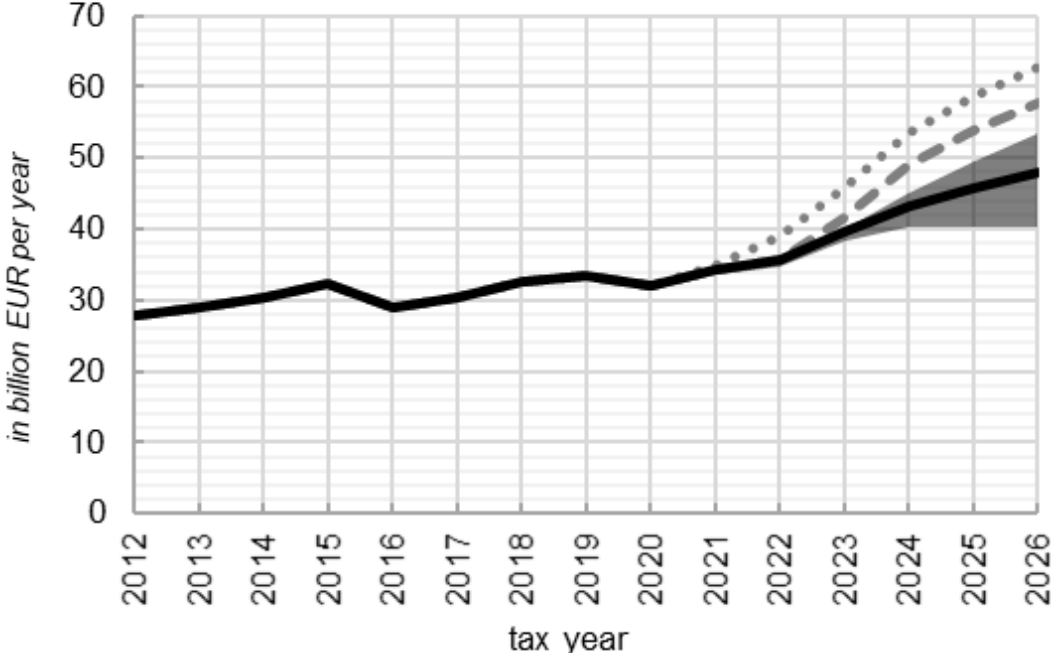
	Categorisation			Total relief volume in % of GDP		
	means-tested (yes/no)	type	temporary or permanent	2022	2023	2024
Income support				1.28	0.80	1.35
One-off payments to all households				0.71		
<i>Increase of a lump-sum climate bonus</i>	<i>no</i>	<i>transfer</i>	<i>temporary</i>	0.63		
<i>Electricity bill voucher (150 EUR per household)</i>	<i>no</i>	<i>transfer</i>	<i>temporary</i>	0.09		
One-off payments to low income households				0.34	0.25	
<i>One-off payments to vulnerable groups</i>	<i>yes</i>	<i>transfer</i>	<i>temporary</i>	0.09		
<i>Tax credit for employees and self-employed</i>	<i>yes</i>	<i>tax</i>	<i>temporary</i>	0.16		
<i>One-off payments to pensioners</i>	<i>yes</i>	<i>transfer</i>	<i>temporary</i>	0.09	0.11	
<i>Transfer for housing and heating</i>	<i>yes</i>	<i>transfer</i>	<i>temporary</i>		0.14	
Measures for families				0.15	0.05	0.07
<i>One-off payment per child</i>	<i>no</i>	<i>transfer</i>	<i>temporary</i>	0.08		
<i>One-off payment per child to vulnerable families</i>	<i>yes</i>	<i>transfer</i>	<i>temporary</i>		0.04	0.07
<i>Earlier increase of a child tax credit</i>	<i>no</i>	<i>tax</i>	<i>temporary</i>	0.06		
<i>Increase of a child tax credit for low income earners</i>	<i>yes</i>	<i>tax</i>	<i>permanent</i>	0.01	0.01	0.00
Increase of commuter tax allowances and credits	<i>no</i>	<i>tax</i>	<i>temporary</i>	0.07	0.05	
Indexation of income tax brackets	<i>no</i>	<i>tax</i>	<i>permanent</i>		0.38	1.09
Indexation of further social transfers	<i>no</i>	<i>transfer</i>	<i>permanent</i>		0.07	0.18
Price reduction				0.12	0.50	0.14
Energy tax measures				0.09	0.07	
<i>Reduction of tax rate on electricity and gas</i>	<i>no</i>	<i>tax</i>	<i>temporary</i>	0.05	0.07	
<i>Delayed introduction of CO₂-price (non-EU-ETS)</i>	<i>no</i>	<i>tax</i>	<i>temporary</i>	0.04		
Electricity price subsidy				0.03	0.43	0.14
<i>Price cap for basic electricity consumption</i>	<i>no</i>	<i>subsidy</i>	<i>temporary</i>	0.03	0.36	0.14
<i>Subsidy of power grid loss cost</i>	<i>no</i>	<i>subsidy</i>	<i>temporary</i>		0.07	
Total in % of GDP				1.40	1.31	1.49
Total in million EUR				6,258	6,274	7,600

Appendix: Indexation of income tax brackets

- Annual indexation of income tax brackets from 2023 was one of the measures passed in response to higher inflation
- Costing of indexation of income tax brackets relative to counterfactual without changes in the tax system
 - not realistic over the longer run
- Uncertainty in future years:
 - Adjustments themselves are more uncertain as they depend on inflation
 - → estimated cost compared to no-policy change scenario more uncertain
 - But: income tax revenues relative to tax base (or GDP) are stabilized and become more certain (less bracket creep)
- To explore uncertainty:
 - 1,000 simulations with alternative paths of inflation, nominal GDP, average nominal wages and employment
 - Shocks taken from VAR estimated with these variables using data from 1995 to 2019

Appendix: Indexation of income tax brackets

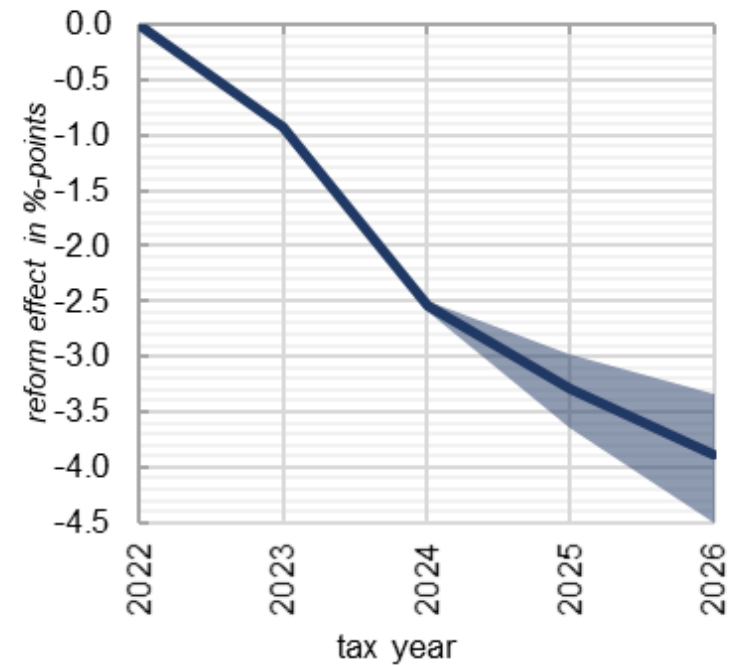
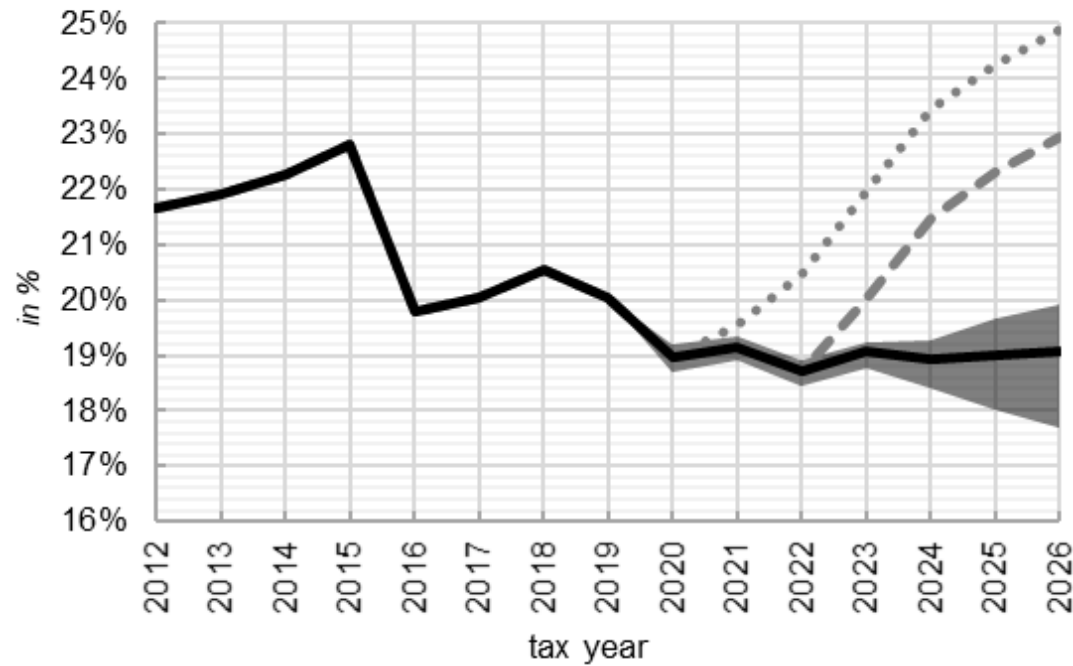
income tax revenues



- without eco-social tax reform
- without indexation of tax brackets
- main scenario after indexation
- bandwidth (67% of simulations)
- reform effect of indexation
- bandwidth (67% of simulations)

Appendix: Indexation of income tax brackets

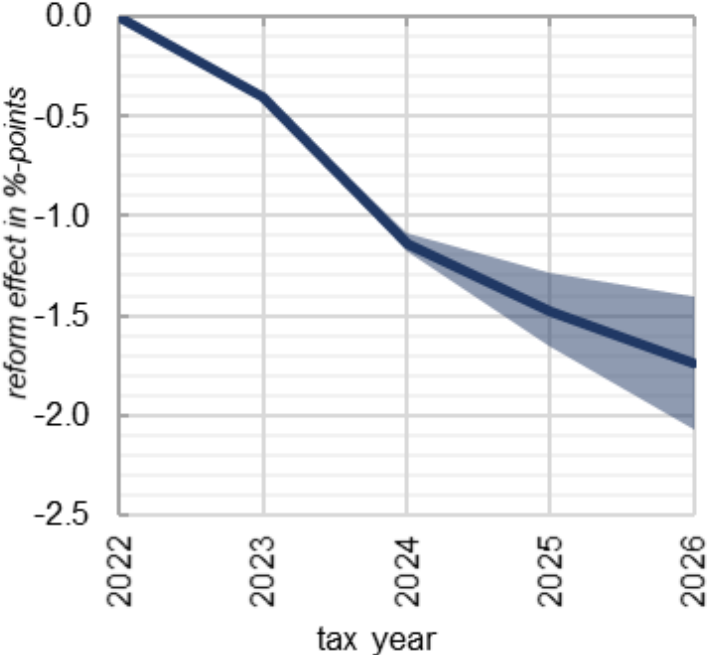
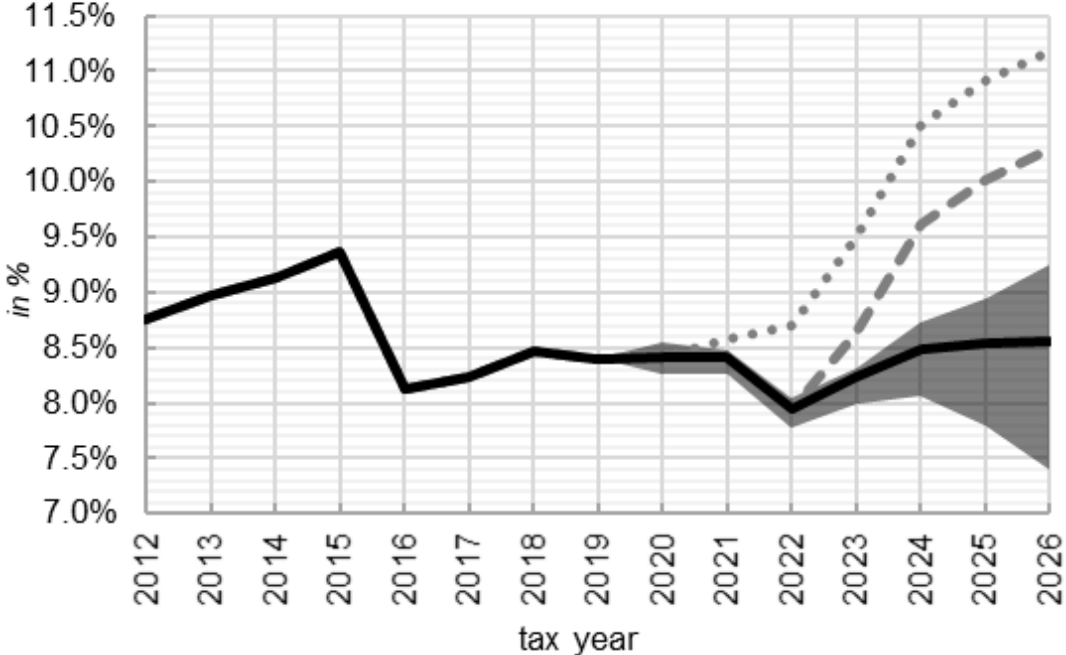
income tax relative to taxable income



- without eco-social tax reform
- without indexation of tax brackets
- main scenario after indexation
- bandwidth (67% of simulations)
- reform effect of indexation
- bandwidth (67% of simulations)

Appendix: Indexation of income tax brackets

income tax relative to GDP



..... without eco-social tax reform — main scenario after indexation — reform effect of indexation
 - - - without indexation of tax brackets ■ bandwith (67% of simulations) ■ bandwith (67% of simulations)