Earnings dynamics and the role of the personal income tax: The case of Italy

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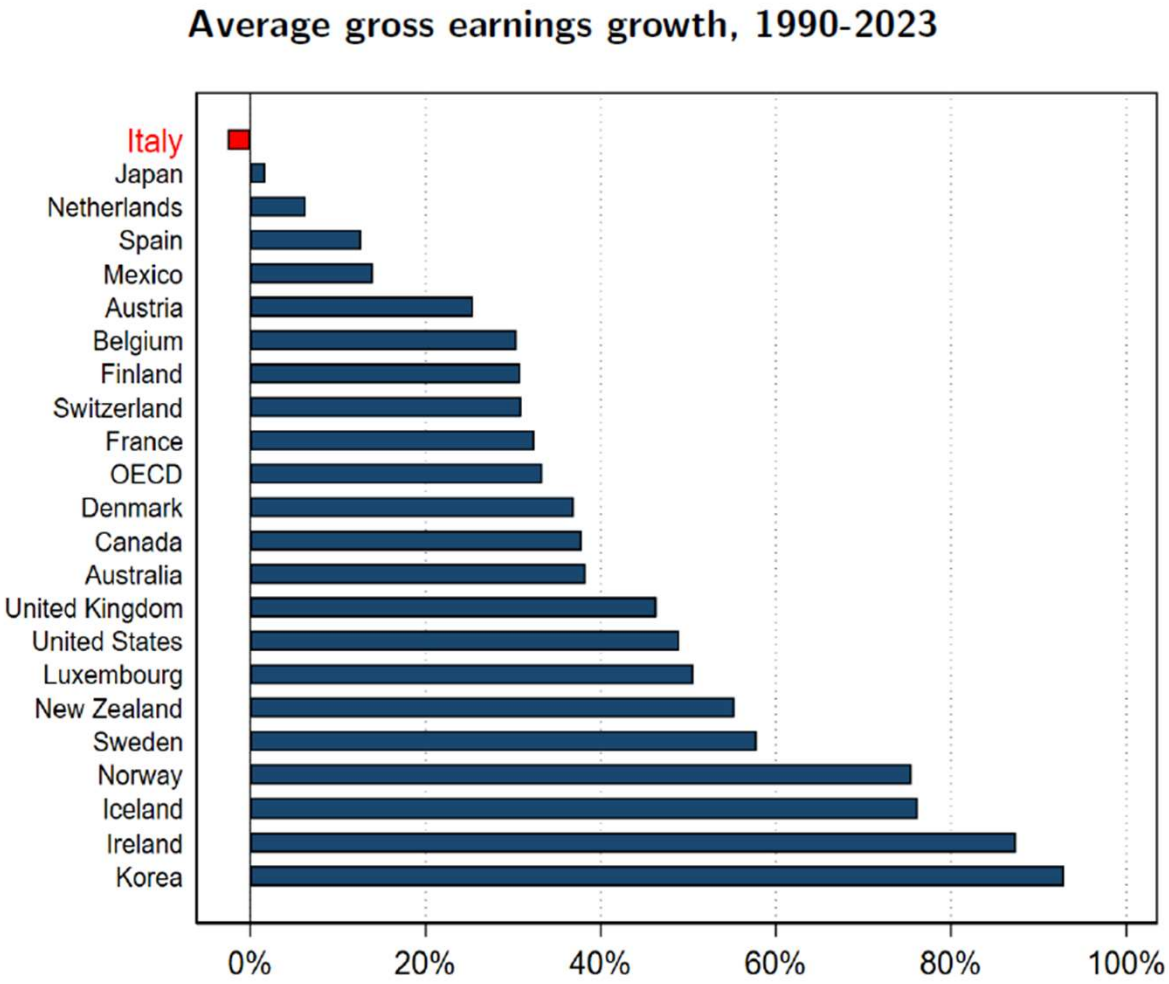
Earnings Dynamics in Italy since 1990



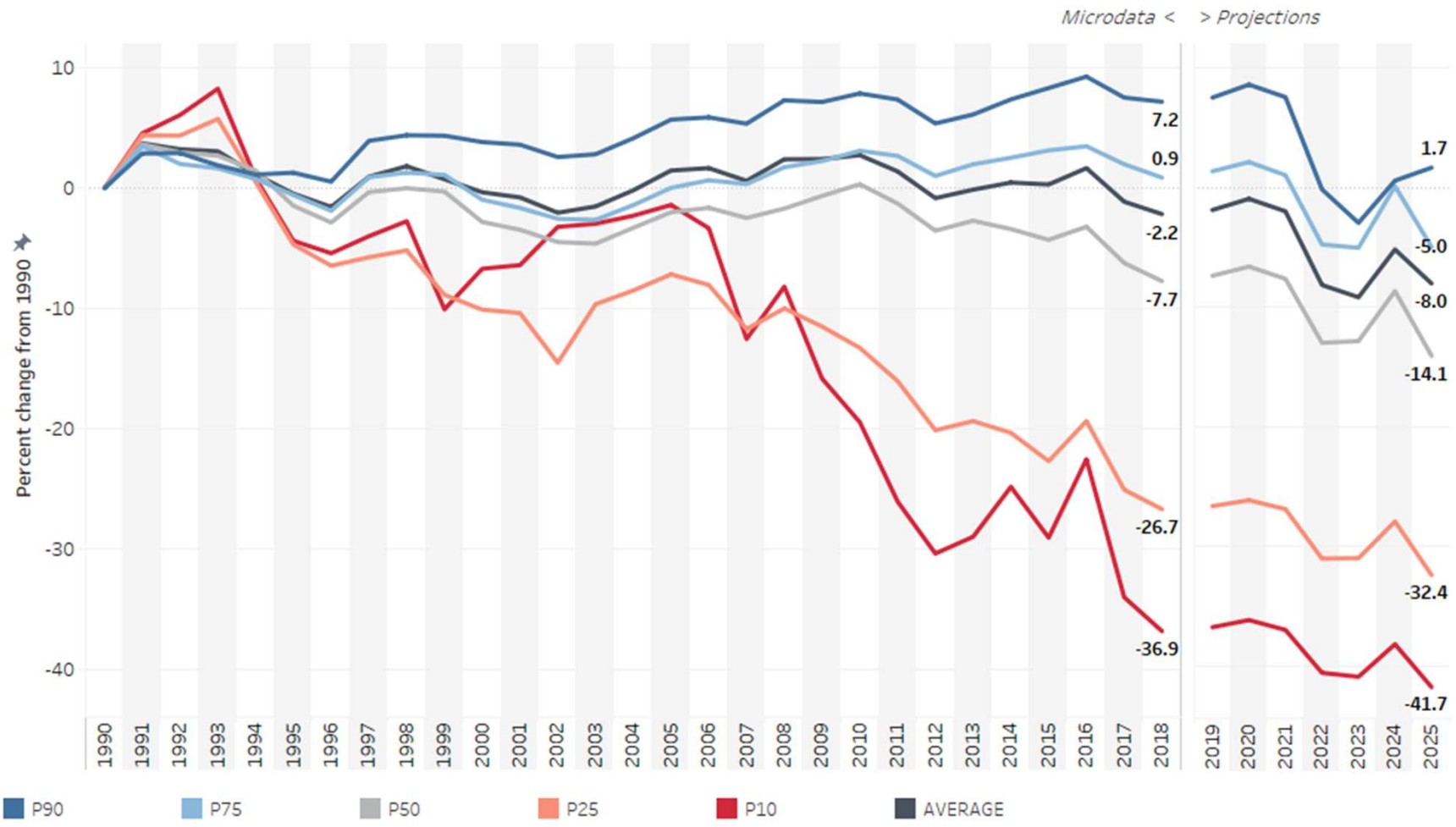
SOURCE: own elaborations on OECD data.

- Earnings have been stagnant over the last three decades in Italy
- How did the tax system affect disposable income dynamics?
- How do fiscal policies relate to income dynamics and how have they influenced the redistributive capacity of the system?

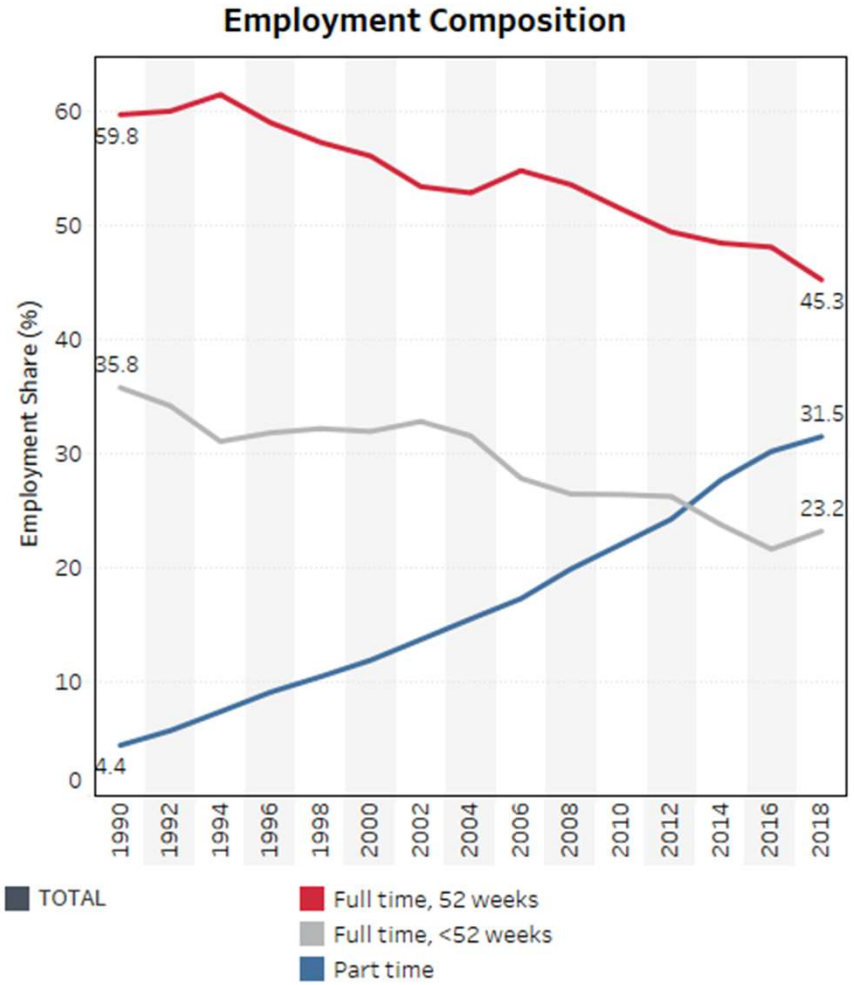
Dataset & Microsimulation

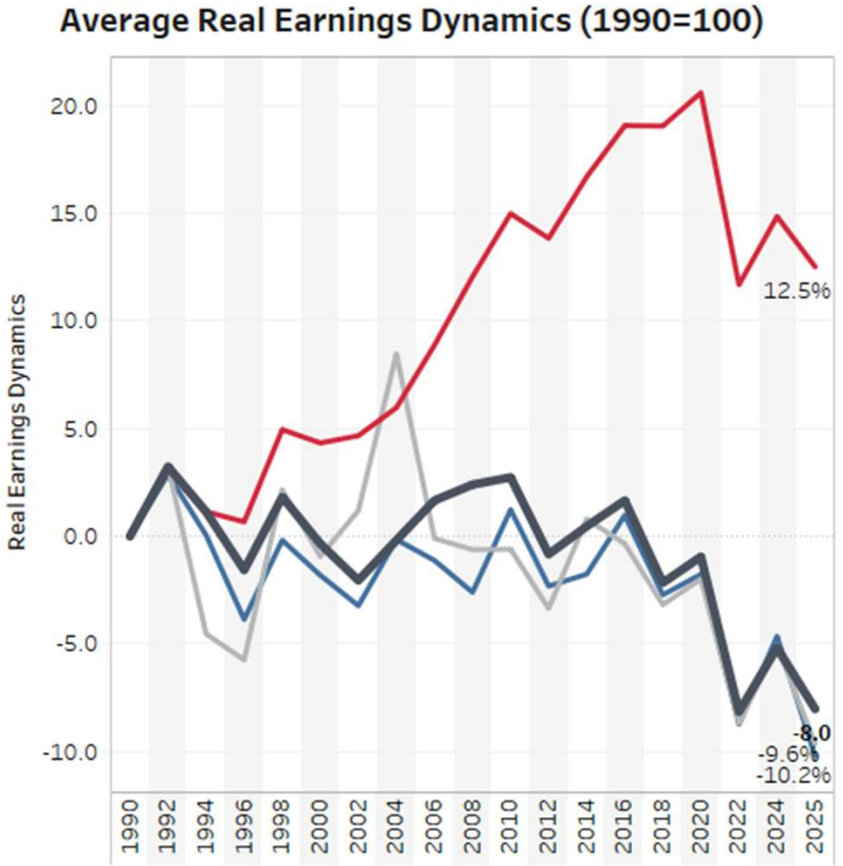
- We use a sample of administrative records on private employees collected by INPS: Longitudinal Sample INPS (LoSaI)
- LoSaI gathers information on annual work spells and in-cash compensations that give right to SICs, as well as on pension receipt (public sector excluded)
- LoSaI sampling:
  - 6.9% of the universe (i.e. individuals with at least one spell as private employee up to 2018)
  - Based on 24 birth dates (1st and 9th of each month and year): no attrition
- LoSaI main informative content (for each spell as private employee):
  - Work-related information: gross earnings, record type (active work, sickness, maternity, job suspension), spell duration, weeks accrued for pension entitlement and calculation, contractual arrangement (part time vs full time), qualification (blue collar vs white collar)
  - Demographic information: sex and year of birth
  - Caveat: Higher incomes are underrepresented due to pensionable income caps
- The sample reports actual wages from 1990-2018. Our analysis extends to 2025 using fixed worker population and updating wages with sector- and skill-specific contractual pay scales.
- Microsimulation of all successive PIT regimes from 1990 to 2025, focusing exclusively on employee income taxation. Analysis excludes other income sources and tax allowances except employee-specific tax credit.

Real Annual Earnings Dynamics by Percentile (1990-2025)



Composition effect: full time vs part time



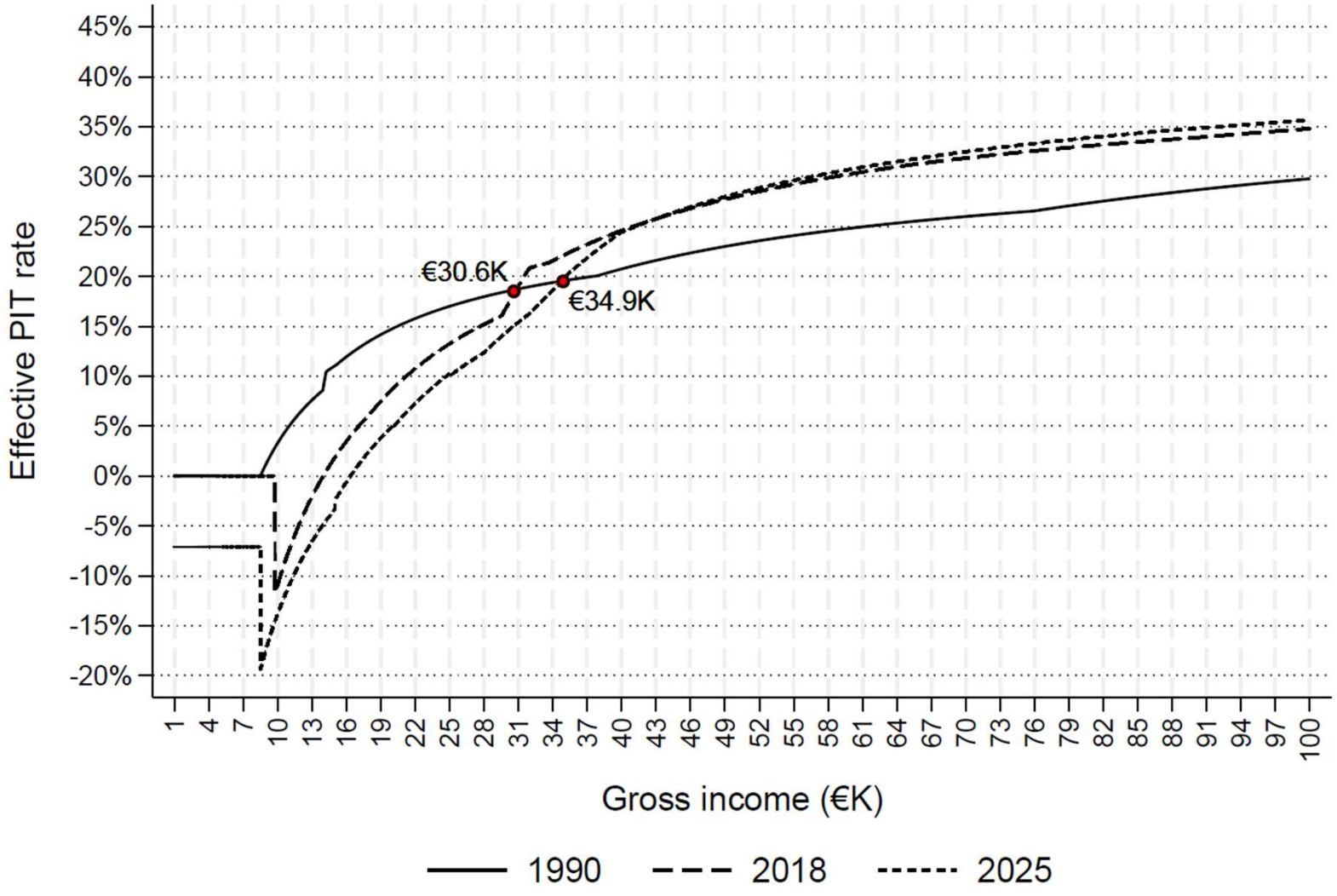


Earnings Dynamics by Employment Segment

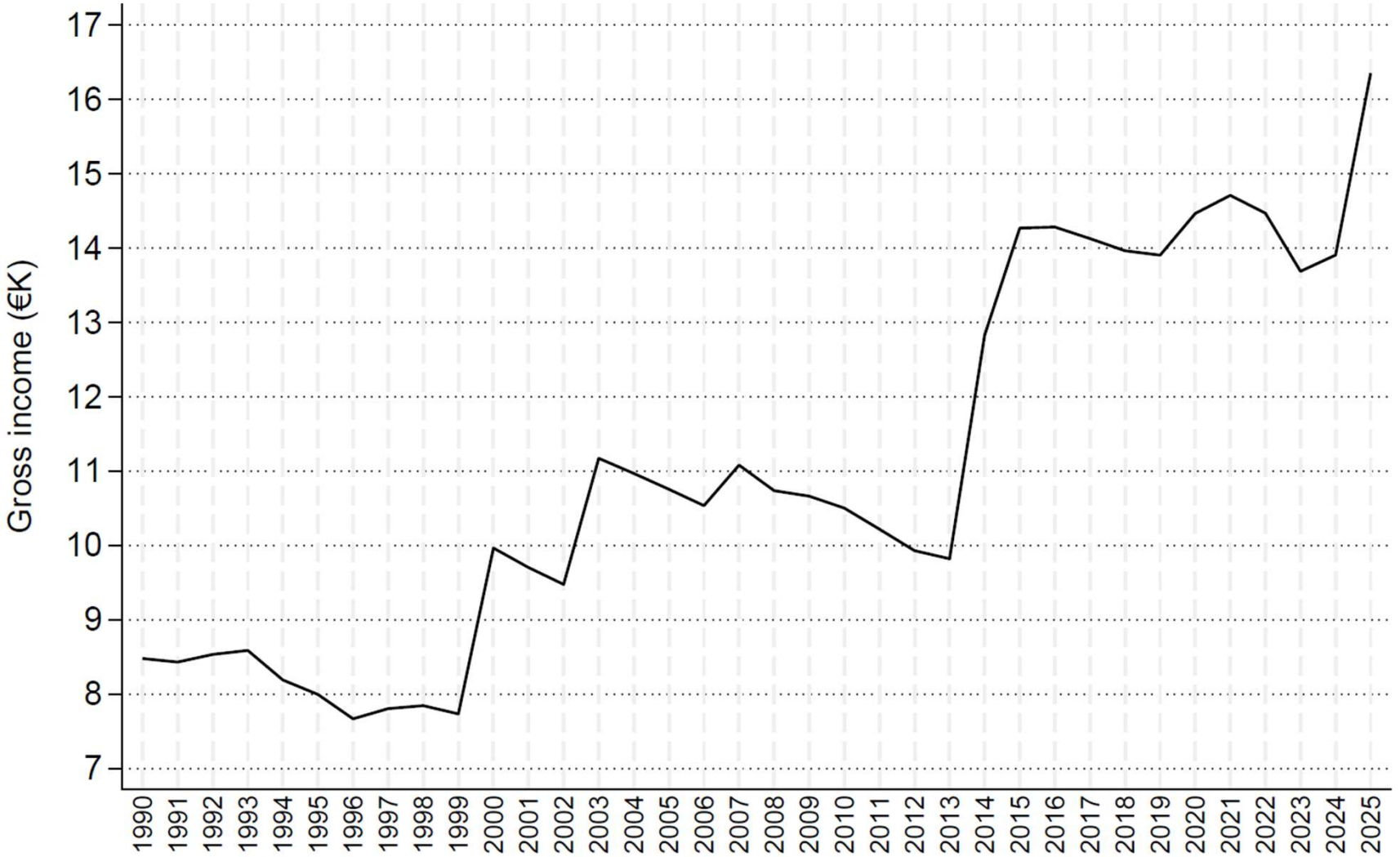
Pre-tax Real Annual Earnings Change 1990 - 2025

		Total	Industry and construction	Services
Total		-9.6	14.6	-22.1
Full time, 52 weeks	Total	10.0	16.0	4.9
	Blue collar	5.9	13.5	-5.3
	White collar	8.5	20.7	2.2
Full time, <52 weeks	Total	-9.6	1.8	-15.2
	Blue collar	-10.1	1.9	-16.5
	White collar	-1.9	16.7	-6.3
Part time	Total	-10.2	0.7	-11.9
	Blue collar	-13.1	-3.9	-14.4
	White collar	5.8	30.1	2.3

Tax regimes


Effective PIT rate
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
€30.6K
€34.9K
1
4
7
10
13
16
19
22
25
28
31
34
37
40
43
46
49
52
55
58
61
64
67
70
73
76
79
82
85
88
91
94
97
100
Gross income (€K)
1990
2018
2025

Minimum taxable income



From taxable to disposable income dynamics

Net (and gross) earnings dynamics

		Total	Industry and construction	Services
Total		-6.2 *(-9.6)*	15.1 *(14.6)*	-17.3 *(-22.1)*
Full time, 52 weeks	Total	9.9 *(10.0)*	14.8 *(16.0)*	5.8 *(4.9)*
	Blue collar	10.3 *(5.9)*	16.1 *(13.5)*	1.7 *(-5.3)*
	White collar	5.1 *(8.5)*	13.4 *(20.7)*	0.9 *(2.2)*
Full time, <52 weeks	Total	-1.0 *(-9.6)*	10.3 *(1.8)*	-6.5 *(-15.2)*
	Blue collar	-1.0 *(-10.1)*	11.0 *(1.9)*	-7.5 *(-16.5)*
	White collar	5.2 *(-1.9)*	21.2 *(16.7)*	1.5 *(-6.3)*
Part time	Total	-2.6 *(-10.2)*	7.7 *(0.7)*	-4.1 *(-11.9)*
	Blue collar	-4.9 *(-13.1)*	4.3 *(-3.9)*	-6.0 *(-14.4)*
	White collar	12.6 *(5.8)*	34.3 *(30.1)*	9.5 *(2.3)*

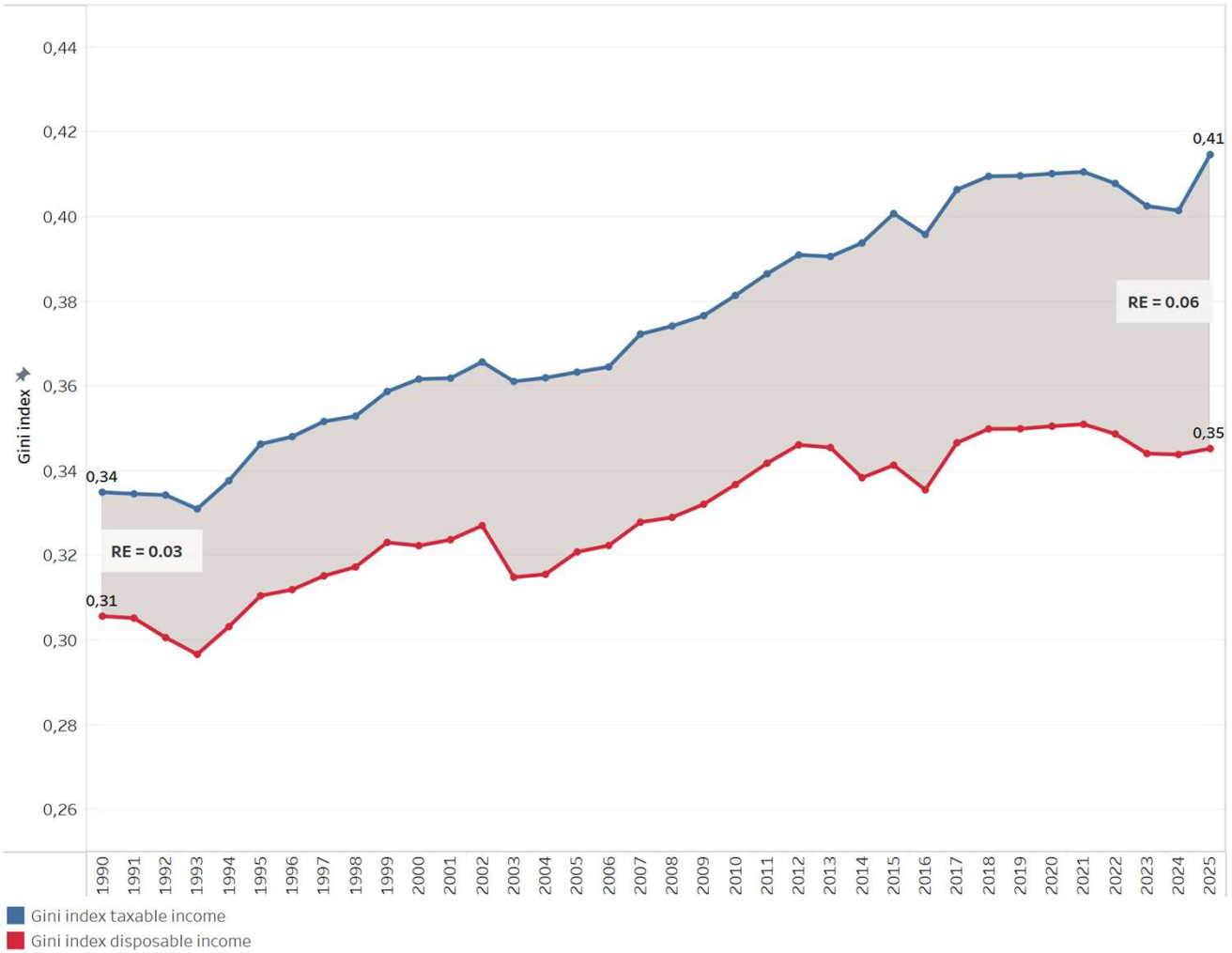
Tax effect

Policy and (1990 tax system effect)

		Total	Industry and construction	Services
Total		3.0 *(0.4)*	2.3 *(-1.8)*	3.3 *(1.5)*
Full time, 52 weeks	Total	1.2 *(-1.3)*	0.7 *(-2.0)*	1.7 *(-0.8)*
	Blue collar	5.0 *(-0.7)*	4.1 *(-1.6)*	6.3 *(0.6)*
	White collar	-2.2 *(-1.1)*	-4.7 *(-2.6)*	-1.0 *(-0.4)*
Full time, <52 weeks	Total	7.7 *(0.6)*	8.4 *(-0.3)*	7.3 *(1.1)*
	Blue collar	8.3 *(0.7)*	9.2 *(-0.1)*	7.8 *(1.2)*
	White collar	5.9 *(-0.1)*	4.7 *(-2.6)*	6.3 *(0.6)*
Part time	Total	6.9 *(0.6)*	7.5 *(-0.7)*	6.8 *(0.8)*
	Blue collar	7.0 *(1.3)*	7.9 *(0.3)*	6.8 *(1.5)*
	White collar	7.7 *(-1.3)*	7.9 *(-4.5)*	7.6 *(-0.9)*

Income Dynamics and Fiscal Policy Support by Earnings Level

Measuring Redistributive Capacity with Synthetic Index



- Following tax literature, we know that RE can be decomposed into three contributions:

$$RE = \frac{t}{1-t} \cdot K + D$$

$\frac{t}{1-t}$: average tax rate effect, with t equal to the average tax rate (ATR)

K : Kakwani index, measure of tax progressivity (i.e. the rate at which tax incidence increases with earnings)

D : reranking effect, accounts for the reordering of units between gross and net earnings

$$RS = \frac{t}{1-t} \cdot K$$

- The variation in the redistributive effect of PIT between two years can be decomposed into three effects (*approach put forward by Baldini (2020), closely related to Bargain and Callan (2010), for all elements in equation (1), except for the reranking term (D ≈ 0)*)

RS decomposition

$t_0()$: Tax function in year 0; $t_1()$: Tax function in year 1

y_0: nominal gross earnings vector in year 0; y_1: nominal gross earnings vector in year 1;

π_1 : 1 + inflation rate between year 0 and 1 (FOI Istat index)

$$\Delta RS_{0,1} = \begin{cases} \textbf{POLICY EFFECT}: & RS[t_1(y_1)] - RS[t_0(y_1)] + \\ \textbf{FISCAL DRAG EFFECT}: & RS[t_0(y_0\pi_1)] - RS[t_0(y_0)] + \\ \textbf{OTHER EFFECTS}: & RS[t_0(y_1)] - RS[t_0(y_0\pi_1)] \end{cases}$$

- Policy effect: change in tax rules; no change in data. *What would be the contribution of tax changes to ΔRS when controlling for any change in gross earnings data?*
- Fiscal drag effect: no change in tax rules; change in data (proportionally adjusted incomes). *If gross earnings data in year 1 differed from gross earnings data in year 0 only due to inflation adjustment, while tax rules remained unchanged, how would this contribute to explaining ΔRS?*
- Other effects (population): no change in tax rules; change in data. *If gross earnings data in year 1 differed from inflation-adjusted gross earnings data in year 0 for any reason, while tax rules remained unchanged, how would this contribute to explaining ΔRS?*

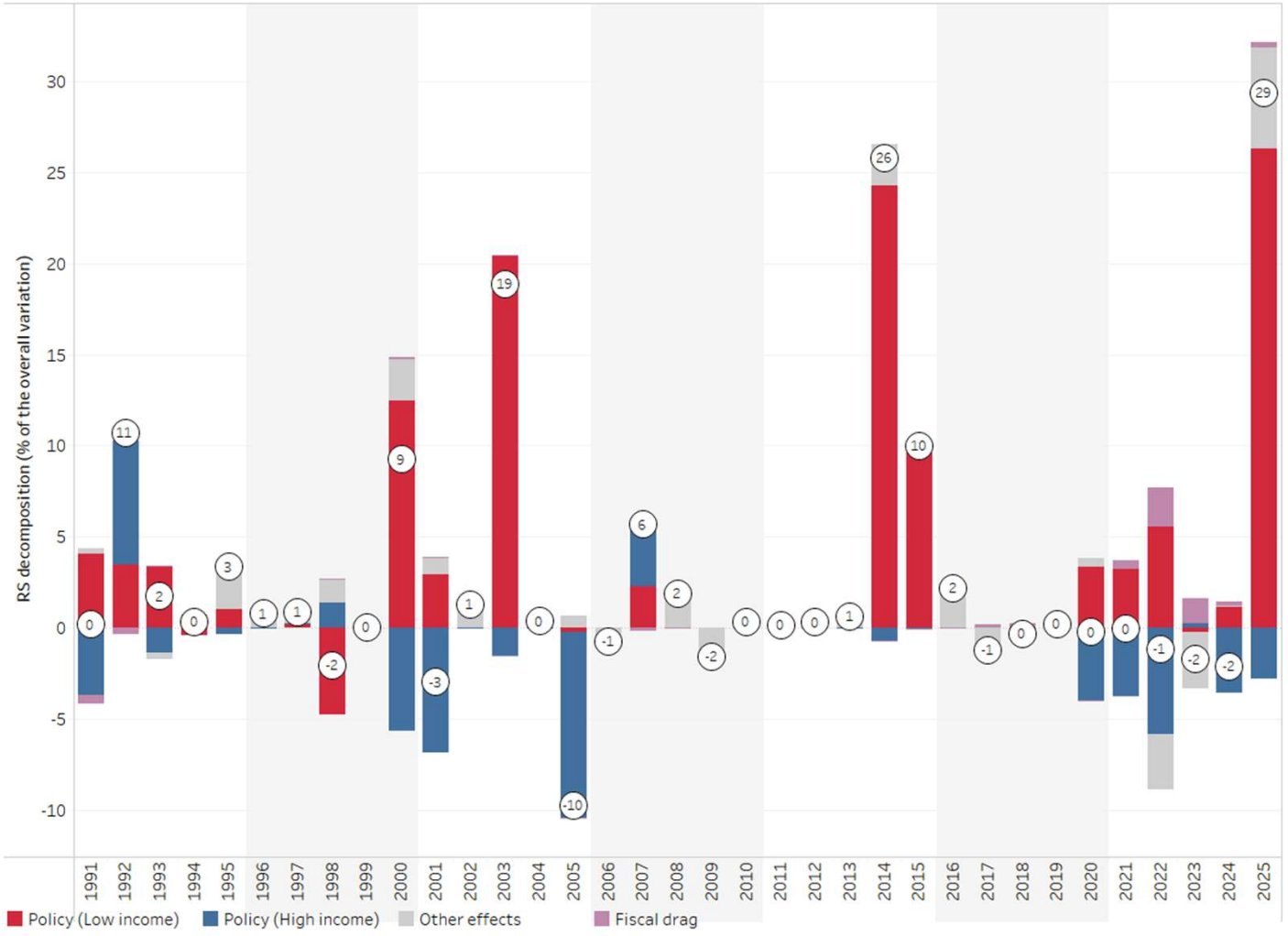
RS decomposition year by year

- Decomposition into the three additive components is performed for each year to minimize path dependency
  - the contribution of each component may vary based on the benchmark earnings' distribution used in the calculation of the policy effect and based on the benchmark tax system used in the calculation of the data effect (y1 and t0, respectively), given the non-linearity of the interactions between earnings and tax rules
  - A logical solution to the path dependency issue would be to average the results of the two decompositions, which is standard practice in the literature. This is particularly relevant when comparing distant years, but can also lead to errors as preliminary analyses on our data suggest.

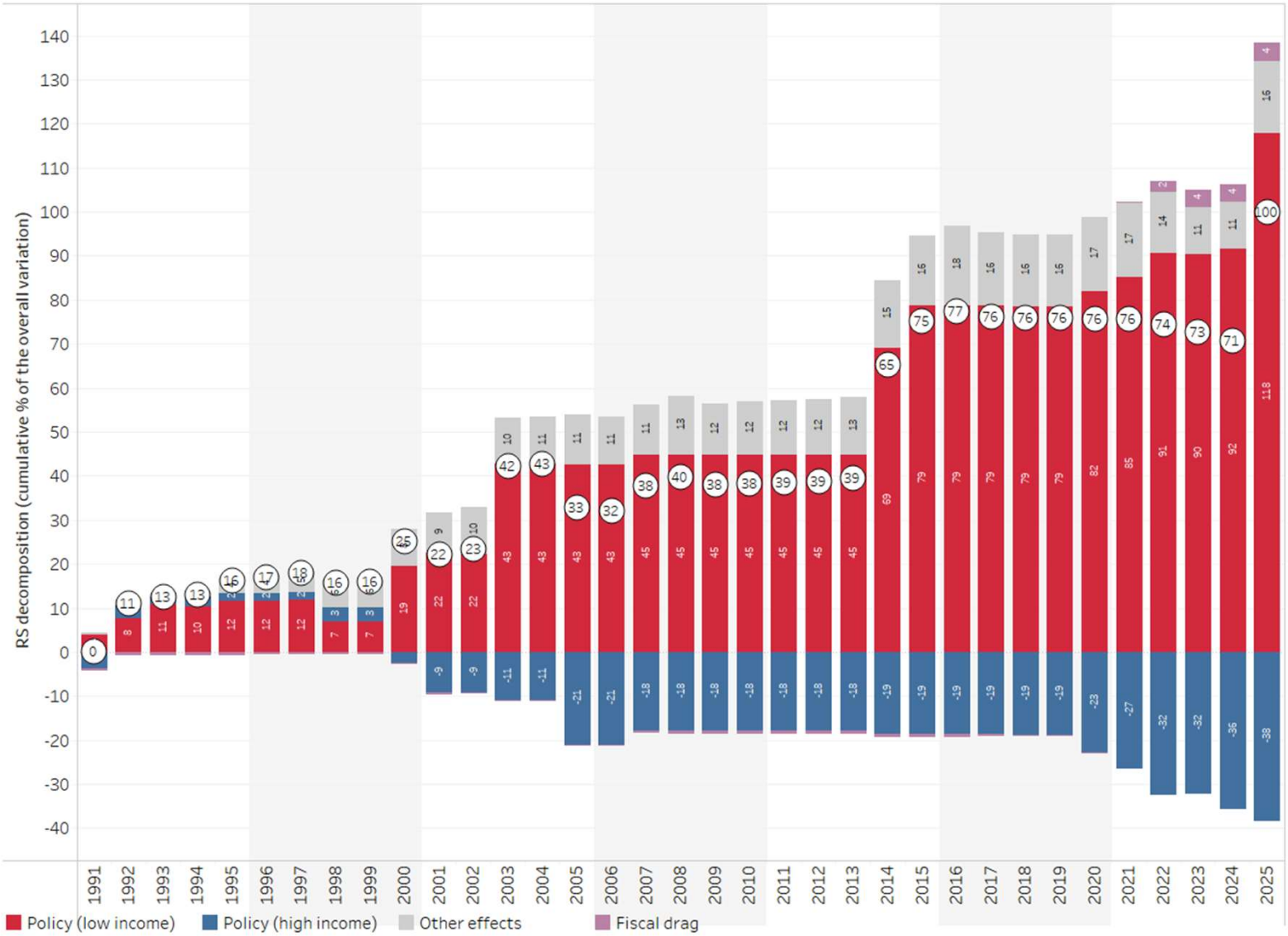
Change in indices	Base-end year decomposition			Year-by-year decomposition		
	End period	Base period	Average	End period	Base period	Average
Redistribution ($\Delta RS_{1990,2018}$) =	3.051	3.051	3.051	3.051	3.051	3.051
Policy effect +	2.392	0.910	1.651	2.403	2.397	2.400
Data effect =	0.660	2.141	1.400	0.648	0.654	0.651
Fiscal drag effect +	0.107	1.276	0.692	-0.009	-0.006	-0.008
Other effect	0.552	0.865	0.709	0.657	0.661	0.659

  - A year-by-year decomposition measures the redistributive effect of policies with the population that was actually affected by the policy. For example, interventions on low incomes would have had a lower redistributive effect if measured on a population with a smaller share of part-time workers.

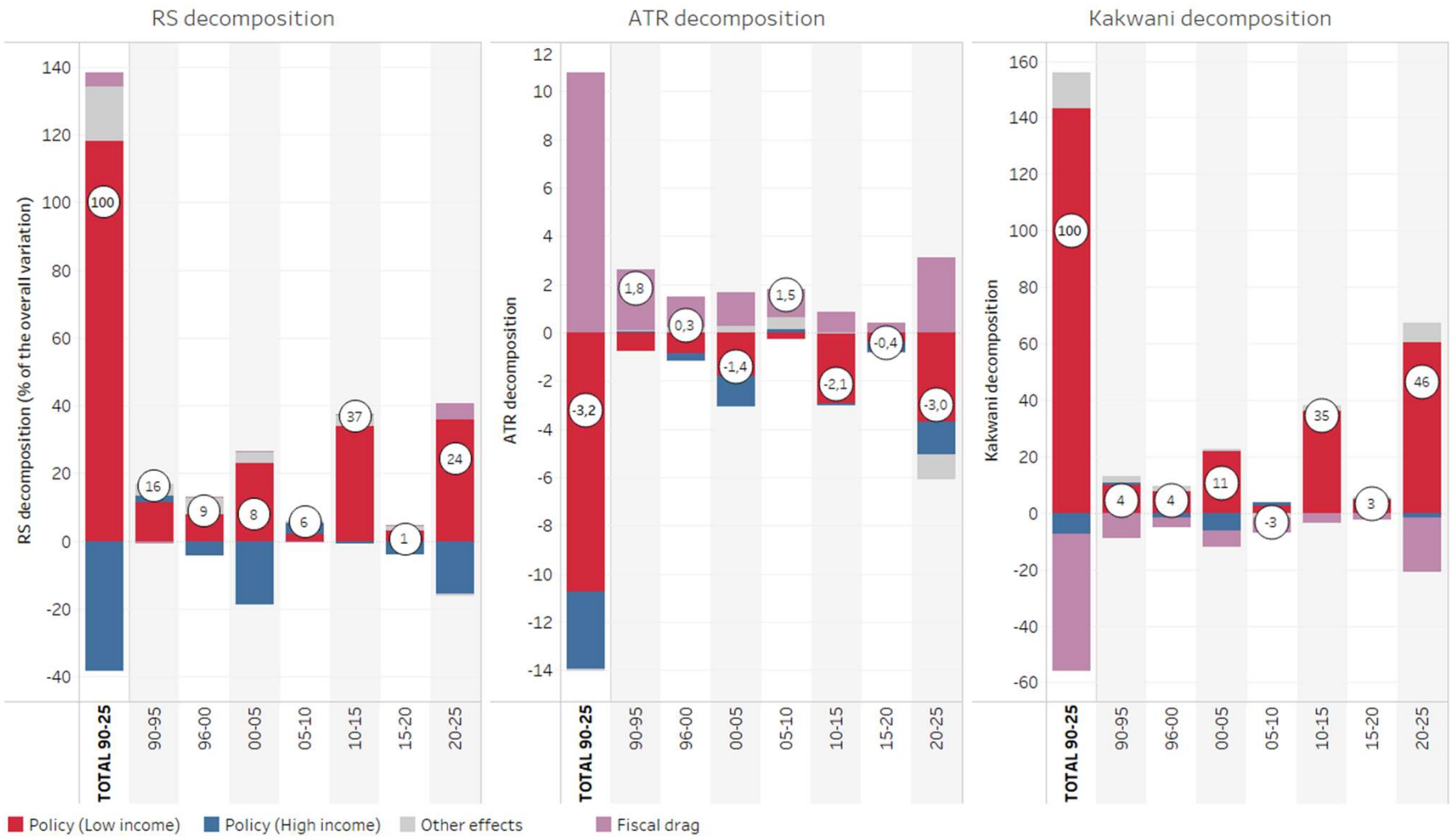
RS breakdown (year by year)



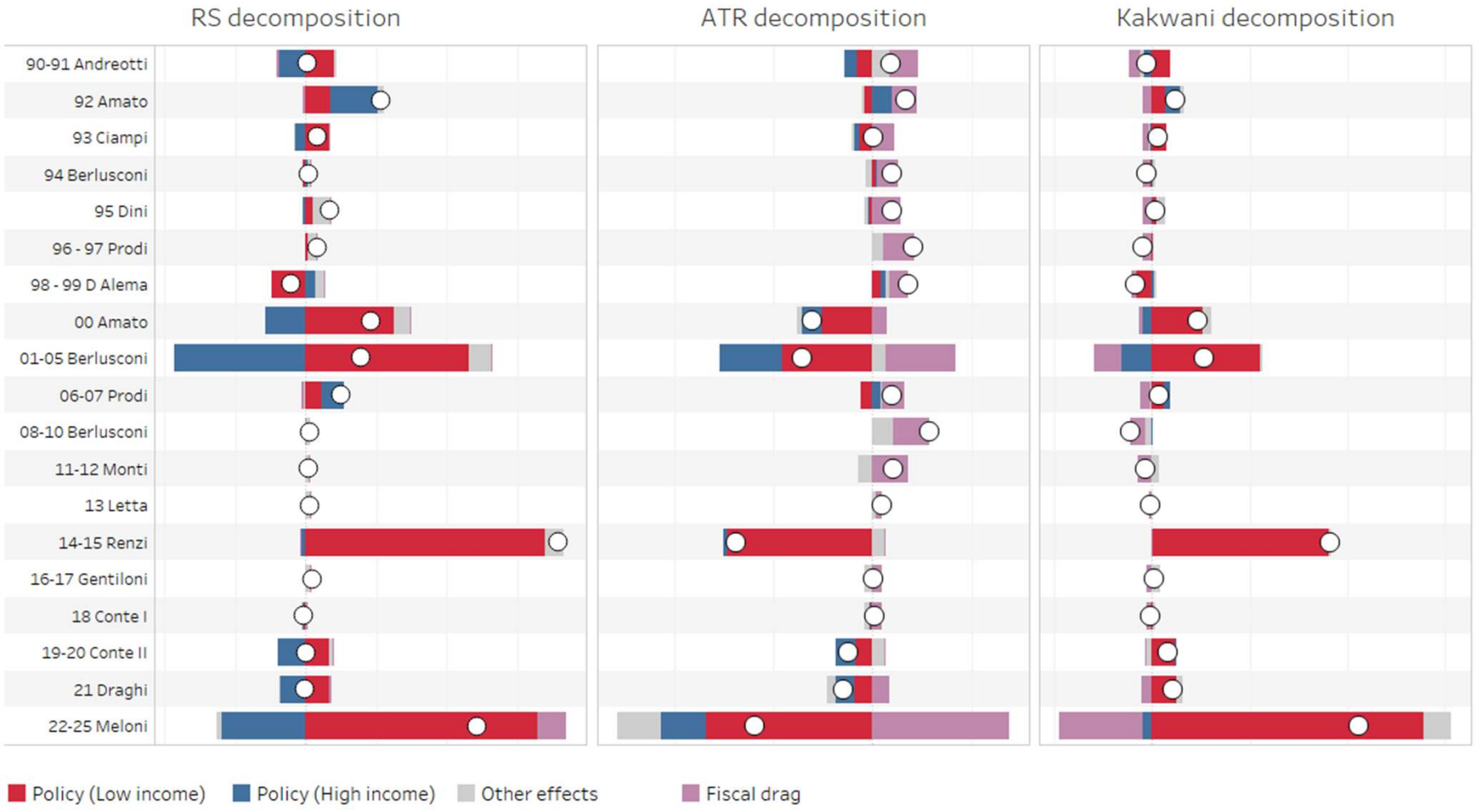
RS cumulative breakdown



RS, ATR and K decomposition
Cumulative effects over five-year periods



RS, ATR and K decomposition
Cumulative effects by Government



Thank you!

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