Reforming work-related tax expenditures in the EU: impact on tax revenues

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ZEW Public Finance & income distribution in Europe
Mannheim, 16 May 2014

Outline

1. Introduction and motivation

- Reforming tax expenditures is a promising avenue to raise revenue in times of fiscal consolidation...

- ... but not all tax expenditures are equal in terms of revenue loss /economic effects:

- behavioural reactions might have substantial effects on budgetary (and macroeconomic) outcomes

- **What we do**:

  - decompose the revenue impacts of tax expenditures reforms into a *mechanical* (i.e. without behavioural reactions) and a *behavioural component*

  - quantify the *welfare cost* of the reforms by calculating the marginal cost of public funds (MCF)

1. Introduction and motivation

- We consider <u>marginal reforms</u> to specific **actual** tax reliefs, i.e., <u>work-related tax expenditures</u>

➔ This is consistent with real-life institutions and with the political economy literature on reforms (gradualism)

➔ But the "shocks" (1% or 1 euro reduction in the size of the tax expenditure) are *not fully comparable* across countries, since depending on the size of the initial tax expenditures

- Our approach combines:

  i) a theoretical model for labour supply,

  ii) micro-simulation results from a EU-wide model and

  iii) heterogeneous labour supply elasticities taken from the empirical literature.

- We cover France, Hungary, Spain, Slovakia and the UK, and use 2010 tax rules

MWP tax expenditures in the EU

- **FR**: *Employment Bonus (Prime pour l'emploi – PPE)* is an individual tax credit, which amount depends on earned income, the tax unit income, the number of hours worked. It increases with the number of dependent children, and is phased out above €16,251 (for single earners)

- **ES:** *Non-refundable tax allowance* for taxpayers receiving employment income. The amount of the allowance is reduced as net employment income increases, varying between €2,652 and €4,080

- **HU:** *Employee Tax Credit* equals 17% of wage income earned, subject to a monthly maximum. The credit can be fully exploited if the annual wage earnings are lower than € 11,572, tapers off above that and is not applicable to earnings above €17,054. (*) Note: the tax credit was abolished as of 2013.

- **SK**: *Employee tax credit* equals 19% of difference between basic allowance and minimum wage or taxable income. Eligible workers must have worked at least 6 months and have only employment income.

- **UK:** *The working tax credit (WTC)* is an income-tested refundable tax credit. WTC contains a number of elements depending on family composition (basic, couple and lone parent element), health (disability and severe disability element), number of hours worked (30 hour element) and age of the claimant (50+ element)

2.1 Methodology: theoretical background

- Standard static labour supply model with (individual-specific) fixed costs of working (Saez, 2002)

- Individuals differ for exogenous productivity and preferences, and face a non-linear income tax schedule

- By utility maximization, individuals decide about whether or not to work (extensive margin), and, conditional on being in work, the number of hours worked (intensive margin)

- In order to facilitate welfare aggregation, income effects are disregarded: using uncompensated –Marshallian– elasticity

2.1 Methodology: theoretical background

- Following Immervoll et al. (2007), the change in revenues from a marginal tax reform (∂z) can be decomposed into a mechanical and a behavioural effect:

$$dR = dM + dB = \sum_{i=1}^{I} \left[\underbrace{\frac{\partial T_i}{\partial z} E_i + \frac{\partial T_0}{\partial z}(N_i - E_i)}_{mechanical} - \left(\underbrace{\frac{\tau_i}{1-\tau_i} \frac{\partial \tau_i}{\partial z} E_i w_i l_i \varepsilon_i}_{\text{intensive margin}} + \underbrace{\frac{a_i}{1-a_i} \frac{\partial(T_i - T_0)}{\partial z} \eta_i E_i}_{\text{extensive margin}} \right)_{behavioural} \right].$$

- Mechanical effect:

$$DM = \sum_i^I \left(\frac{\partial T_i}{\partial z} E_i + \frac{\partial T_0}{\partial z} (N_i - E_i) \right)$$

- Behavioural effect:

tax parameters

$$DB = \sum_i^I \left[\underbrace{\frac{\tau_i}{1-\tau_i} \frac{d\tau_i}{dz} E_i w_i l_i \varepsilon_i}_{\text{intensive margin}} + \underbrace{\frac{a_i}{1-a_i} \frac{\partial(T_i - T_0)}{\partial z} \eta_i E_i}_{\text{extensive margin}} \right]$$

E_i : employed people in group (decile) i

N_i : total population in group (decile) i

T_i (resp. T_0): (net) tax liability when in (out of) employment

τ_i : effective marginal tax rate

a_i : participation tax rate

$w_i l_i$: labour income

ε_i : hours-of-work elasticity

η_i : participation elasticity

2.2 Labour supply elasticities

- Need to account for **heterogeneity** across types of individuals and countries, particularly through the extensive margin, in line with the empirical literature. We consider 2 cases:

  i. participation and hours-of-work elasticities are country-specific and invariant across income distribution. Estimates are taken from Bargain et al. (2012)

    We single out _lone parents:_ participation elasticities are decreasing across deciles but not varying across countries.

  ii. Baseline like in 1.

    We single out _lone parents_ and _married women:_ participation elasticities are decreasing across deciles but not varying across countries.

- Overall, we have 4 scenarios, in particular :

  ✓ S1 : 1% reduction in tax expenditure (i)

  ✓ S2: 1% reduction differentiating married women elasticities (ii)

2.3 Tax-benefit parameters

- Some parameters (EMTRs, participation tax rates) depend on the tax-benefit system

- We use EUROMOD, the EU-wide micro-simulation tools to retrieve those parameters

- Advantages: comprehensive picture of tax burden and benefit entitlements <u>at the individual level.</u> Relevant as some tax relief are also conditioned on individual (other than income-related) and family characteristics

- <u>Interaction between taxes & benefits is factored-in</u>

3. Results: size of tax expenditures

In % of total personal income taxes and social security contributions

	Microsimulation (EUROMOD) simulations				National estimates	
	Tax allow.	Tax credits	Total tax exp.	MWP-tax exp.	Total tax exp.	MWP-tax exp.
France	9.0%	0.1%	9.1%	0.7%	7.7%	1.0%
Spain	13.3%	21.6%	34.9%	5.1%	37.7%	N/A
UK	21.2%	0.3%	21.6%	0.8%	21.3%	0.5%
Hungary	0%	27%	27%	11.1%	N/A	N/A
Slovakia	23.0%	3.1%	26.1%	0.3%	N/A	0.27%

Source: EUROMOD simulations, EUROMOD country manuals and national sources.

3. Results: Fiscal cost of tax expenditures

| decile	% of recipients	Total fiscal cost of MWP tax expenditure	Average monthly fiscal cost of MWP tax expenditure	Total taxes (*)	Total benefits	Total net taxes
			France			
1	65.2%	638.4	35.7	1058	620	438
2	34.6%	178.8	18.7	1782	433	1349
3	26.1%	124.8	18.3	2232	330	1902
4	18.9%	169.2	34.8	2475	296	2179
5	21.7%	178.8	36.8	2701	331	2370
6	13.0%	124.8	43.6	2865	301	2564
7	5.5%	49.8	41.5	3365	246	3119
8	1.7%	13.3	38.2	3529	251	3278
9	0.3%	3.0	48.1	4477	200	4277
10	0.2%	1.0	31.9	6120	303	5817
All deciles	20.8%	1481.9	30.6	30605	3311	27294
			Spain			
1	66.8%	140.0	8.4	308	92	216
2	96.9%	718.0	40.8	509	38	471
3	98.4%	420.0	24.6	694	33	661
4	99.2%	337.0	19.5	770	19	751
5	99.9%	534.0	28.6	907	31	876
6	100.0%	628.0	38.1	1121	33	1088
7	100.0%	1210.0	61.5	1278	21	1257
8	100.0%	1110.0	62.8	1653	31	1622
9	100.0%	1130.0	61.2	1922	21	1901
10	100.0%	1150.0	67.5	2929	27	2902
All deciles	96.3%	7380.0	41.8	12091	345	11746

3. Results: Fiscal cost of tax expenditures

| decile	% of recipients	Total fiscal cost of MWP tax expenditure	Average monthly fiscal cost of MWP tax expenditure	Total taxes (*)	Total benefits	Total net taxes
			UK			
1	23.8%	369.9	197.2	168	168	0
2	36.5%	740.7	290.9	341	104	236
3	42.5%	401.4	145.5	455	94	361
4	28.1%	216.0	115.2	559	71	488
5	15.2%	76.5	71.4	703	68	635
6	1.7%	15.0	126.1	845	62	783
7	0.4%	2.9	105.1	1048	62	987
8	0.0%	0.0	0.0	1257	63	1194
9	0.0%	0.0	0.0	1618	65	1553
10	0.0%	0.0	0.0	3346	77	3270
All deciles	13.8%	1822.5	177.4	10340	832	9508
			Hungary			
1	99.9%	12.2	51.4	23	8	15
2	100.0%	12.9	55.6	26	7	19
3	99.7%	12.6	56.6	33	5	28
4	100.0%	13.0	56.9	40	5	35
5	100.0%	13.2	57.3	47	7	40
6	99.8%	13.1	57.5	55	7	49
7	100.0%	13.8	58.4	69	8	60
8	99.5%	12.8	57.6	79	7	71
9	99.3%	11.9	50.1	110	9	101
10	49.4%	2.6	11.8	211	11	200
All deciles	94.6%	118.2	51.4	693	75	617
			Slovakia			
1	97.1%	18.7	8.8	30	10	20
2	0.7%	0.1	3.7	59	7	52
3	0.0%	0.0	0.0	26	3	23
4	0.0%	0.0	0.0	53	5	48
5	0.0%	0.0	0.0	60	6	54
6	0.0%	0.0	0.0	66	5	61
7	0.0%	0.0	0.0	81	6	75
8	0.0%	0.0	0.0	81	4	77
9	0.0%	0.0	0.0	104	5	99
10	0.0%	0.0	0.0	160	6	154
All deciles	9.4%	18.7	8.8	720	58	662

otes: All figures in Mio euros, except for average monthly fiscal cost of MWP tax expenditure (in euros). Average monthly
scal cost of MWP tax expenditure for recipient households only. (*)Total taxes includes PIT and SSC. For France, total taxes
cludes PIT, SSC, CSG and CRDS
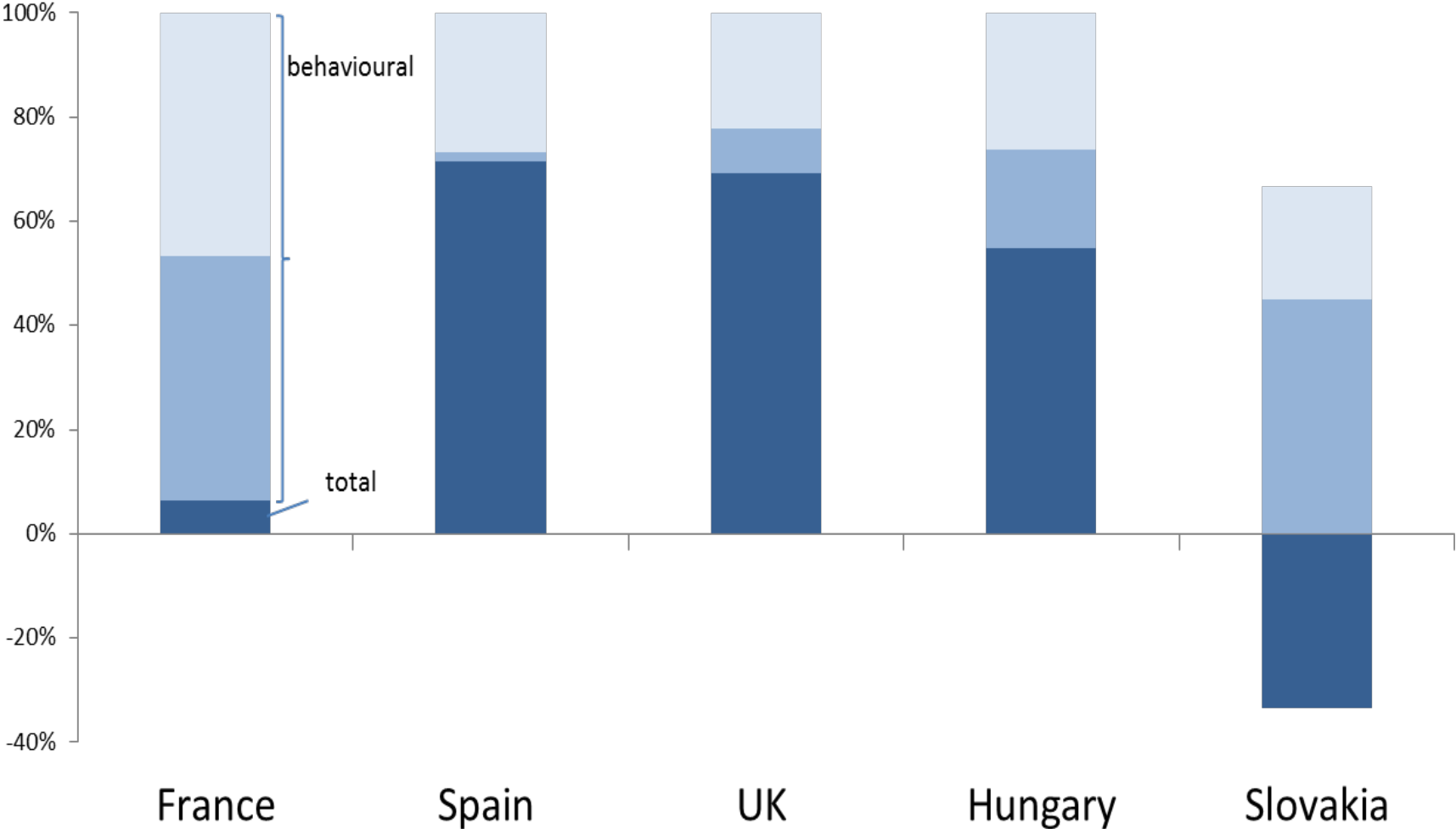
Mechanical revenue impact (1% reduction)
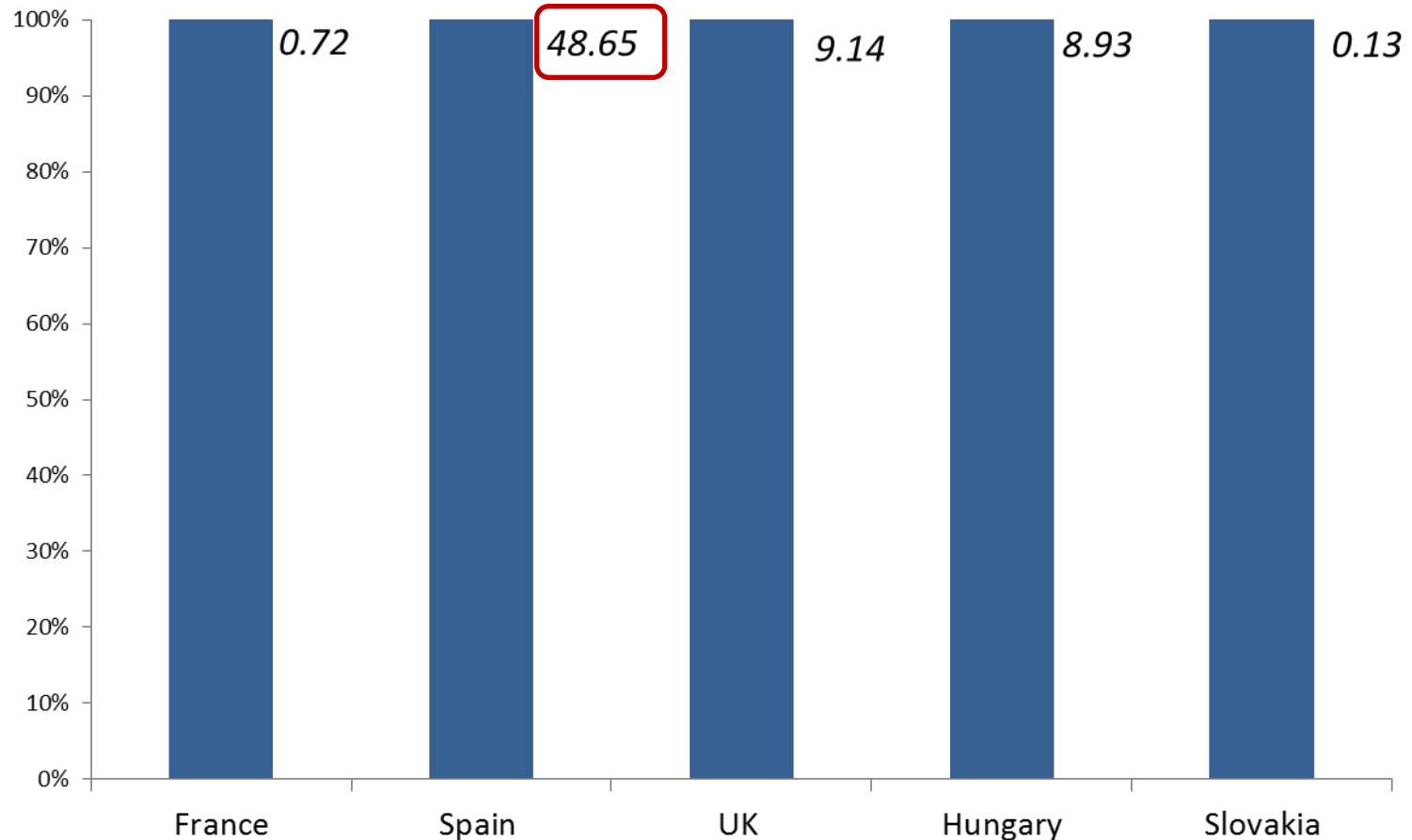
Note: figures in mio EUR/ per month

Total effect after (min) behavioural effect
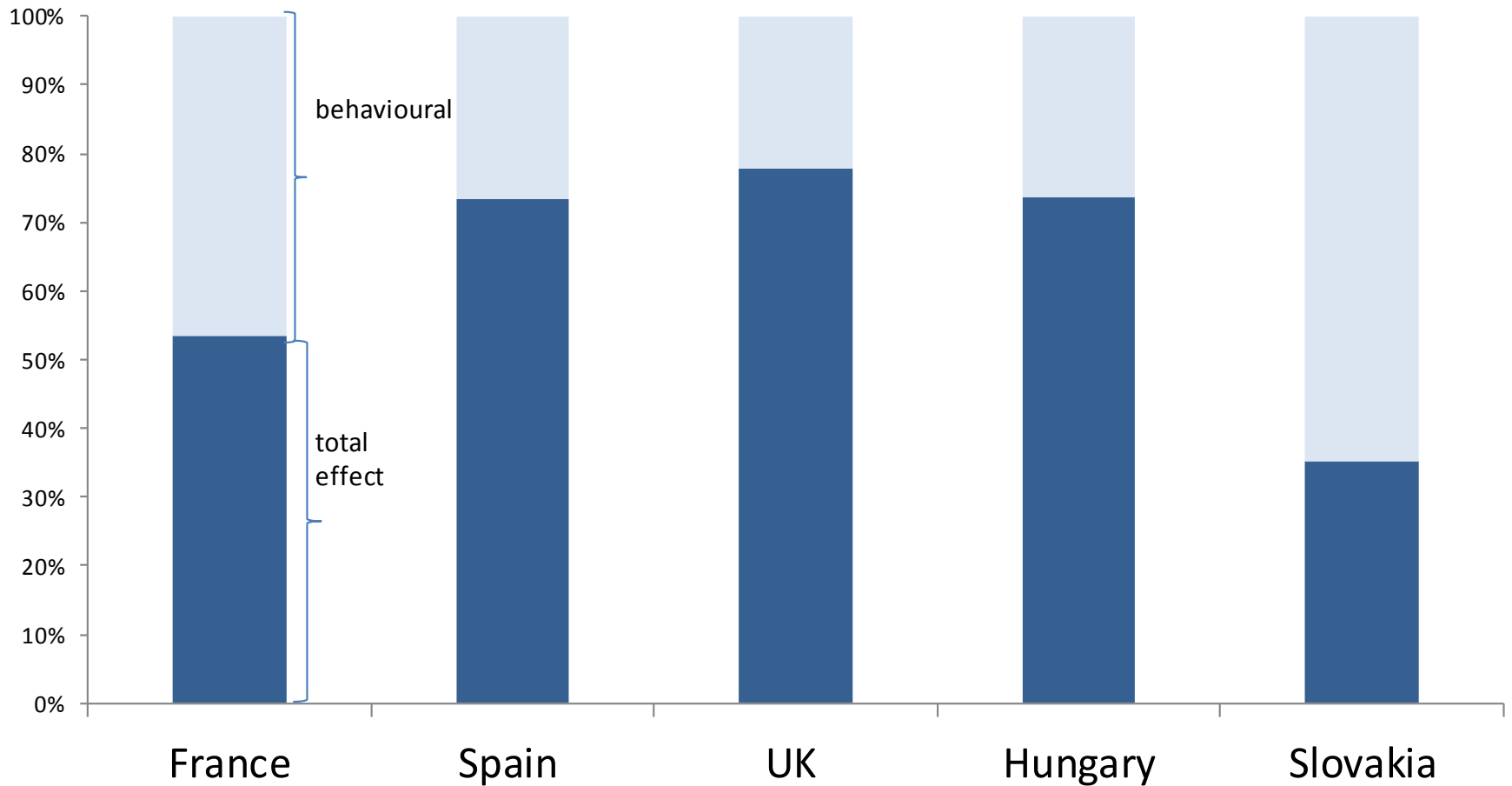
# Total effect after (max) behavioural effect

3. Results: the marginal cost of public funds

- Equity-efficiency trade-off: what's the cost of raising and additional unit of revenue? ➜ calculate the marginal cost of public funds (MCF)

- MCF: suppose tax is raised by 10pc and the private sector reduces taxed activity (=tax base) by 2pc ➜ tax revenue increase by 8pc (not 10pc). Since 10pc tax rate increase generates only 8pc increase in tax revenue, the cost of raising that last, or marginal, euro of tax revenue is 10/8=1+2/8, or 1.25. In other words, at the existing tax rate, raising an additional euro of tax revenue costs society 1.25 euro.

- In our case:

$$MCF = -\frac{d\text{Welfare}}{d\text{Revenue}} = \frac{d\text{MechanicalEffect}}{dR} = 1 + \frac{\left|d\text{BehaviouralEffect}\right|}{dR}$$

3. Results: the marginal cost of public funds
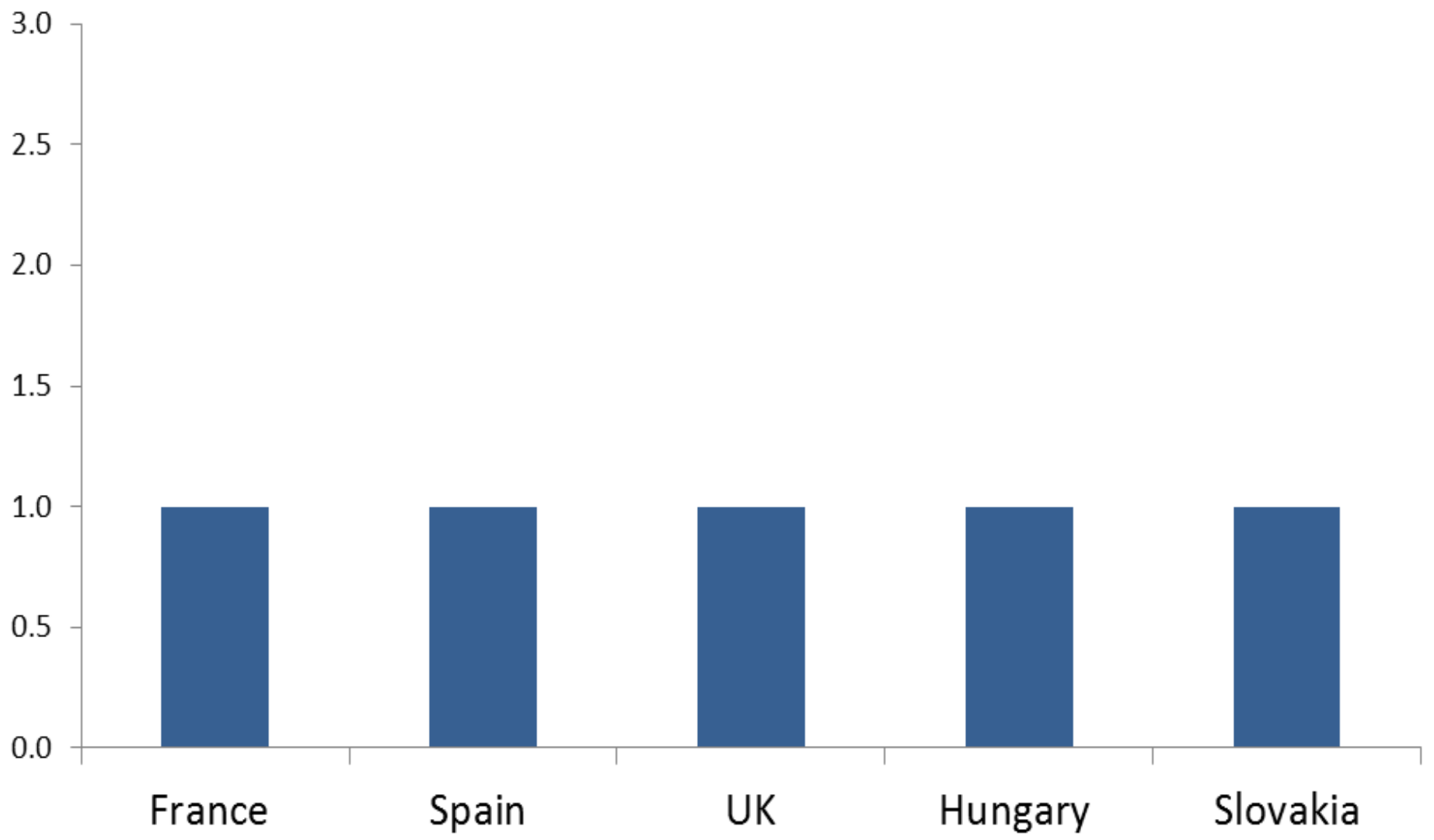
€ 1 cent of extra revenue raised

3. Results: the marginal cost of public funds

€ 1 cent of extra revenue raised + additional welfare cost (min)
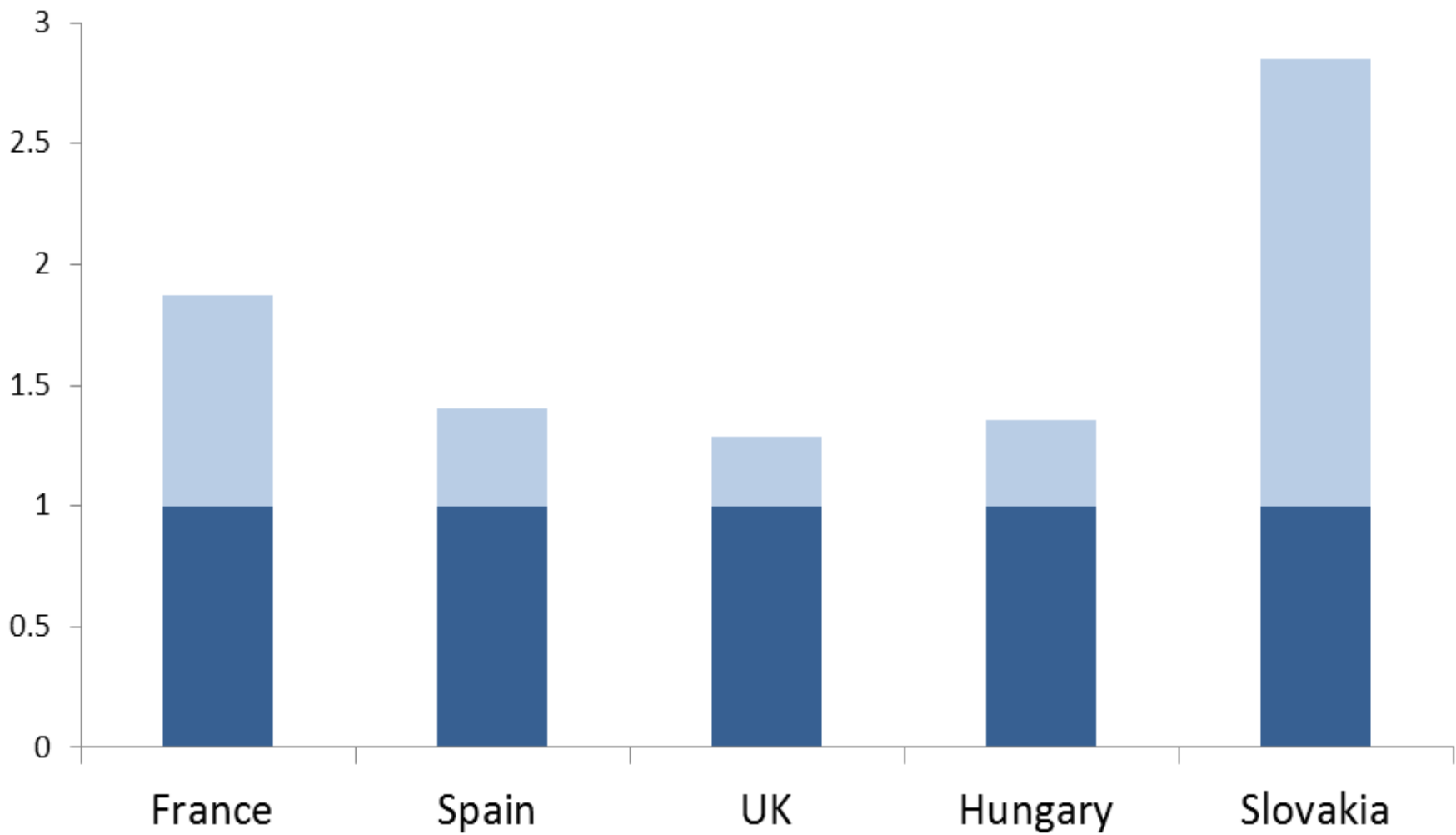
3. Results: the marginal cost of public funds

€ 1 cent of extra revenue raised + additional welfare cost (max)
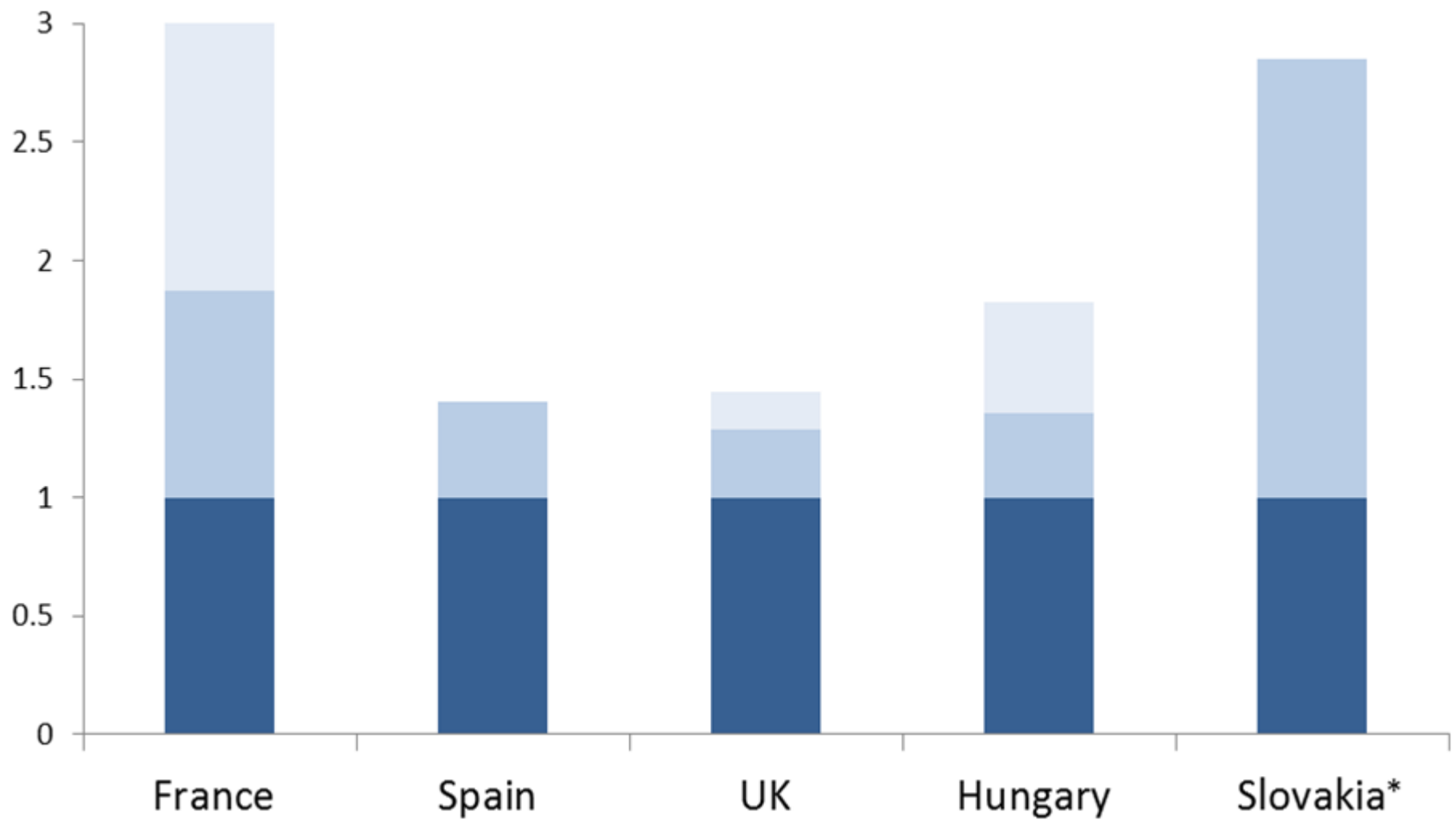
* Slovakia has negative total revenue effect!

4. Conclusions and policy directions

- Are work-related tax expenditures a promising avenue for raising revenue in times of fiscal consolidation? **<u>Probably not</u>**

- The mechanical impact of marginal reductions in the tax reliefs depends on the initial size of the tax expenditures, varying across countries.

- As suggested by the use of different scenarios, the results are affected by the calibration of the labour supply elasticities across agents.

4. Conclusions and policy directions (cont'd)

- The behavioural effect washes away at least one-fourth of the mechanical impact of the reform. In some instances, the revenue gain erosion might become substantial.

- For policies strongly targeted at the bottom of the earnings distribution, the reform might even bring about a net revenue loss.

- The extensive margin plays a much larger role than the intensive margin, as commonly believed in the economic literature.

THANK YOU!

Additional results

A1. Effective marginal tax rates
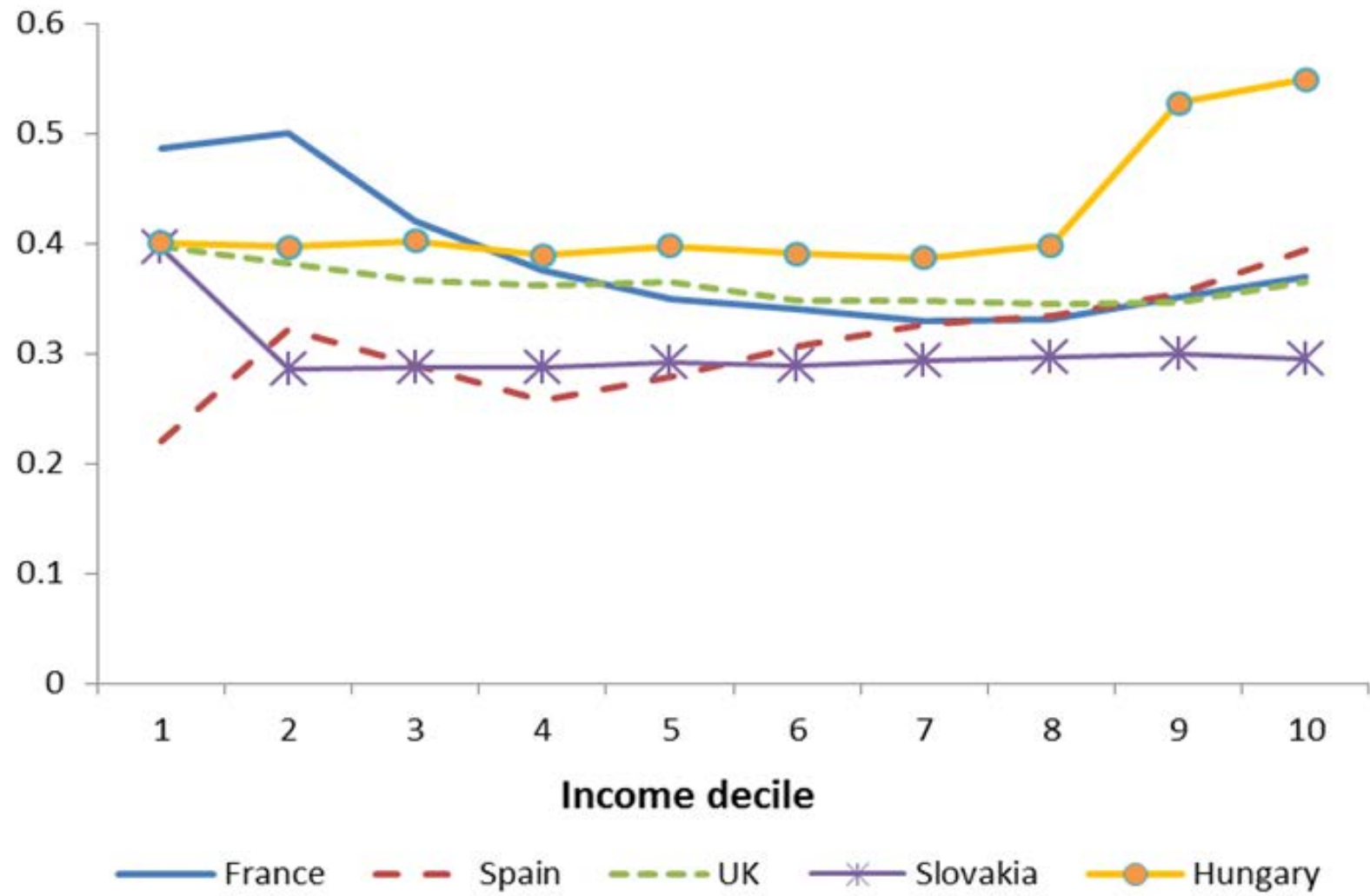
A1. Participation tax rates

A1. Simulation results for France

Decomposition of the impact of a 1% decrease in **Employment Bonus tax credit (PPE)** on tax revenues (€ million per month)

Scenario 1: etas & epsilon as in Bargain et al. , for lone parents etas as in Immervoll et al. (i.e. decreasing across deciles)

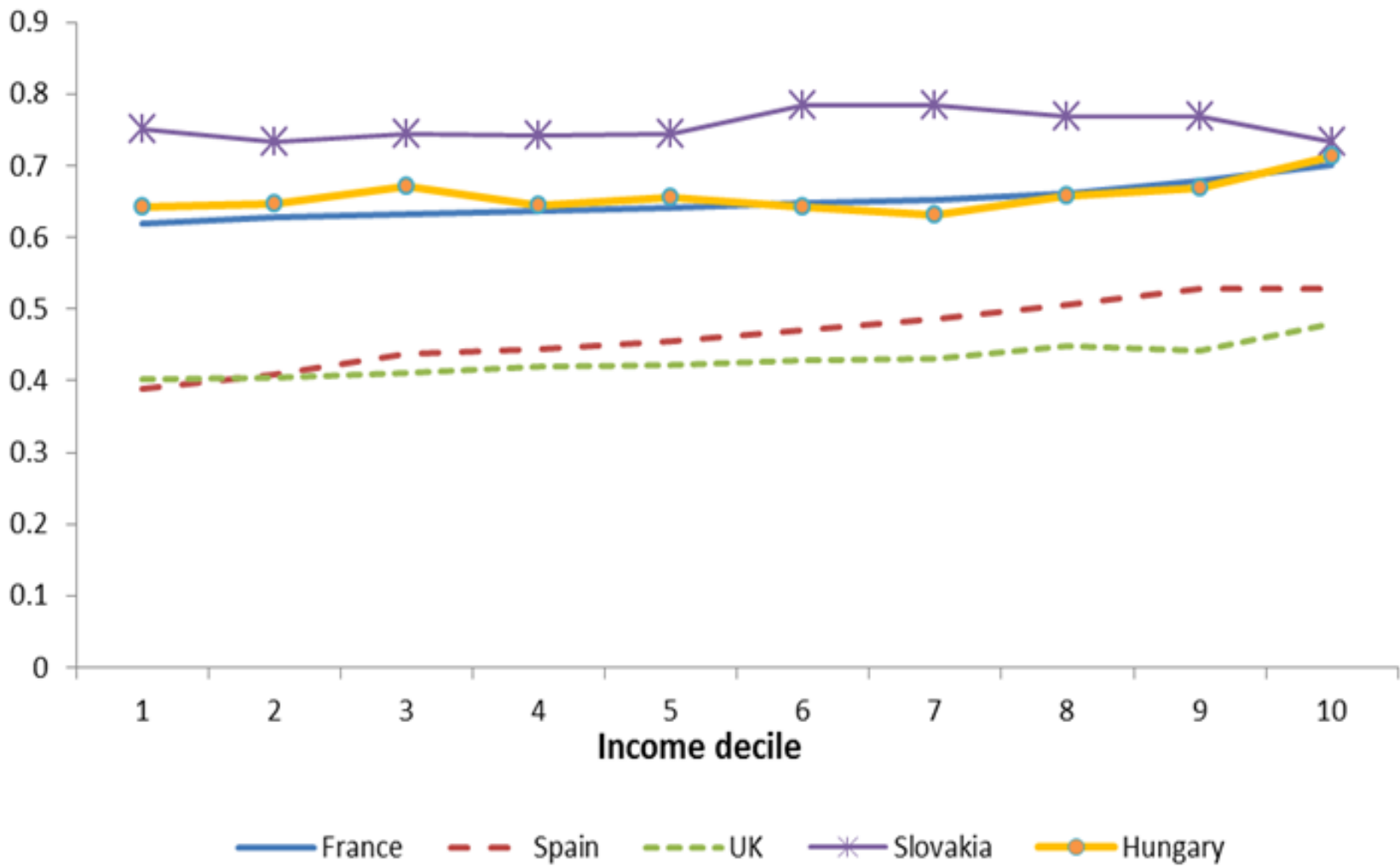| decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.07	0.15	-0.09	-0.02	-0.06
2	0.19	0.23	-0.04	-0.04	0.01
3	0.05	0.06	-0.01	-0.01	0.00
4	0.02	0.16	-0.14	-0.15	0.01
5	0.03	0.07	-0.04	-0.04	0.00
6	0.02	0.05	-0.03	-0.03	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	*0.39*	*0.73*	*-0.34*	*-0.29*	*-0.05*

Scenario 2: etas & epsilon as in Bargain et al. , for lone parents & married women etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	-0.10	0.15	-0.25	-0.19	-0.06
2	0.07	0.23	-0.15	-0.16	0.01
3	0.02	0.06	-0.05	-0.05	0.00
4	0.00	0.16	-0.16	-0.16	0.01
5	0.02	0.07	-0.05	-0.04	0.00
6	0.02	0.05	-0.03	-0.03	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	*0.05*	*0.73*	*-0.68*	*-0.63*	*-0.05*

A1. Simulation results for Spain

Decomposition of the impact of a 1% decrease in Make Work Pay **tax allowance** on tax revenues (€ million per month)

Scenario 1: etas & epsilon as in Bargain et al. , for lone parents etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.45	0.82	-0.38	-0.25	-0.12
2	3.11	5.41	-2.30	-2.01	-0.29
3	4.02	5.39	-1.38	-1.71	0.33
4	2.80	4.04	-1.24	-1.21	-0.02
5	3.04	4.27	-1.23	-1.19	-0.03
6	3.54	5.23	-1.70	-1.48	-0.22
7	3.93	5.27	-1.34	-1.31	-0.02
8	4.08	5.41	-1.33	-1.33	0.00
9	4.02	5.65	-1.63	-1.28	-0.35
10	5.75	7.16	-1.40	-1.35	-0.05
total	**34.73**	**48.65**	**-13.92**	**-13.14**	**-0.78**

Scenario 2: etas & epsilon as in Bargain et al. , for lone parents & married women etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.38	0.82	-0.45	-0.32	-0.12
2	2.63	5.41	-2.78	-2.49	-0.29
3	3.85	5.39	-1.55	-1.88	0.33
4	2.67	4.04	-1.37	-1.35	-0.02
5	3.06	4.27	-1.20	-1.17	-0.03
6	3.57	5.23	-1.66	-1.44	-0.22
7	4.14	5.27	-1.13	-1.11	-0.02
8	4.33	5.41	-1.08	-1.08	0.00
9	4.64	5.65	-1.01	-0.66	-0.35
10	6.40	7.16	-0.76	-0.71	-0.05
total	**35.67**	**48.65**	**-12.99**	**-12.20**	**-0.78**

A1. Simulation results for the UK

Decomposition of the impact of a 1% decrease in **Working Tax Credit** on tax revenues (€ million per month)

Scenario 1: etas & epsilon as in Bargain et al. , for lone parents etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	4.14	5.12	-0.99	-0.97	-0.02
2	1.69	2.28	-0.58	-0.57	-0.01
3	0.86	1.14	-0.28	-0.27	-0.01
4	0.17	0.28	-0.10	-0.10	0.00
5	0.15	0.21	-0.06	-0.06	0.00
6	0.02	0.02	0.00	0.00	0.00
7	0.08	0.09	-0.01	-0.01	0.00
8	0.01	0.01	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	**7.12**	**9.14**	**-2.02**	**-1.98**	**-0.04**

Scenario 2: etas & epsilon as in Bargain et al. , for lone parents & married women etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	3.65	5.12	-1.48	-1.46	-0.02
2	1.49	2.28	-0.78	-0.77	-0.01
3	0.78	1.14	-0.37	-0.36	-0.01
4	0.17	0.28	-0.11	-0.11	0.00
5	0.15	0.21	-0.06	-0.06	0.00
6	0.02	0.02	-0.01	-0.01	0.00
7	0.08	0.09	-0.01	-0.01	0.00
8	0.01	0.01	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	**6.33**	**9.14**	**-2.81**	**-2.77**	**-0.04**

A1. Simulation results for Hungary

Decomposition of the impact of a 1% decrease in **Employee tax credit** on tax revenues (€ million per month)

Scenario 1: etas & epsilon as in Bargain et al. , for lone parents etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.51	0.85	-0.35	-0.35	0.00
2	0.43	0.78	-0.35	-0.35	0.00
3	0.68	1.00	-0.32	-0.32	0.00
4	0.78	1.01	-0.24	-0.24	0.00
5	0.75	1.02	-0.27	-0.27	0.00
6	0.71	0.96	-0.24	-0.24	0.00
7	0.90	1.12	-0.22	-0.22	0.00
8	0.84	1.04	-0.20	-0.20	0.00
9	0.82	0.96	-0.14	-0.16	0.02
10	0.16	0.18	-0.02	-0.02	0.00
total	*6.59*	*8.93*	*-2.34*	*-2.36*	*0.02*

Scenario 2: etas & epsilon as in Bargain et al. , for lone parents & married women etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.17	0.85	-0.68	-0.68	0.00
2	-0.04	0.78	-0.82	-0.82	0.00
3	0.39	1.00	-0.61	-0.61	0.00
4	0.50	1.01	-0.51	-0.51	0.00
5	0.59	1.02	-0.43	-0.43	0.00
6	0.58	0.96	-0.38	-0.38	0.00
7	0.87	1.12	-0.26	-0.26	0.00
8	0.80	1.04	-0.24	-0.24	0.00
9	0.87	0.96	-0.09	-0.11	0.02
10	0.17	0.18	-0.02	-0.02	0.00
total	*4.89*	*8.93*	*-4.04*	*-4.06*	*0.02*

A1. Simulation results for Slovakia

Decomposition of the impact of one euro decrease in **Employee tax credit** on tax revenues (€ million per month)

Scenario 1: etas & epsilon as in Bargain et al. , for lone parents etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	0.05	0.13	-0.08	-0.09	0.00
2	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	*0.05*	*0.13*	*-0.08*	*-0.09*	*0.00*

Scenario 2: etas & epsilon as in Bargain et al. , for lone parents & married women etas as in Immervoll et al. (i.e. decreasing across deciles)

decile	total	mechanical	behavioural_total	behavioural_extensive	behavioural_intensive
1	-0.13	0.13	-0.26	-0.26	0.00
2	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00
total	*-0.13*	*0.13*	*-0.26*	*-0.26*	*0.00*