FOR WHOM THE TAX TOLLS: ESTIMATING THE ELASTICITY OF LABOR INCOME IN THE CANTON OF LUCERNE

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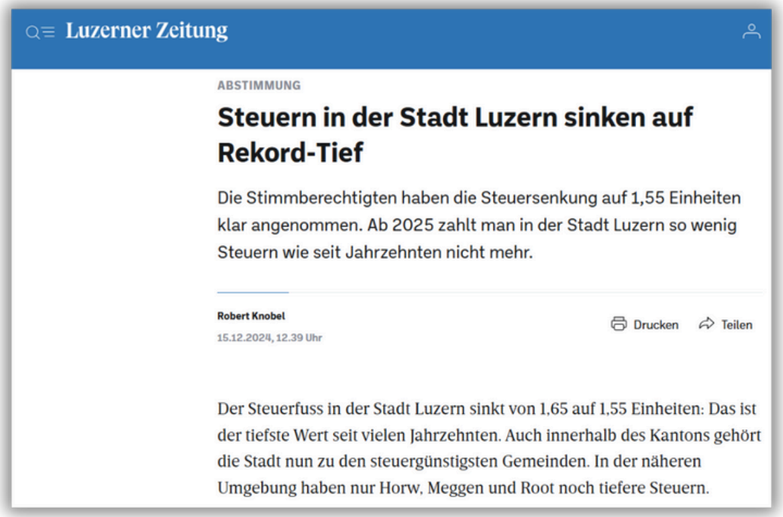
July 4, 2025


Luzerner Zeitung

ABSTIMMUNG

Steuern in der Stadt Luzern sinken auf Rekord-Tief

Die Stimmberechtigten haben die Steuersenkung auf 1,55 Einheiten klar angenommen. Ab 2025 zahlt man in der Stadt Luzern so wenig Steuern wie seit Jahrzehnten nicht mehr.

Robert Knobel
15.12.2024, 12.39 Uhr

Drucken Teilen

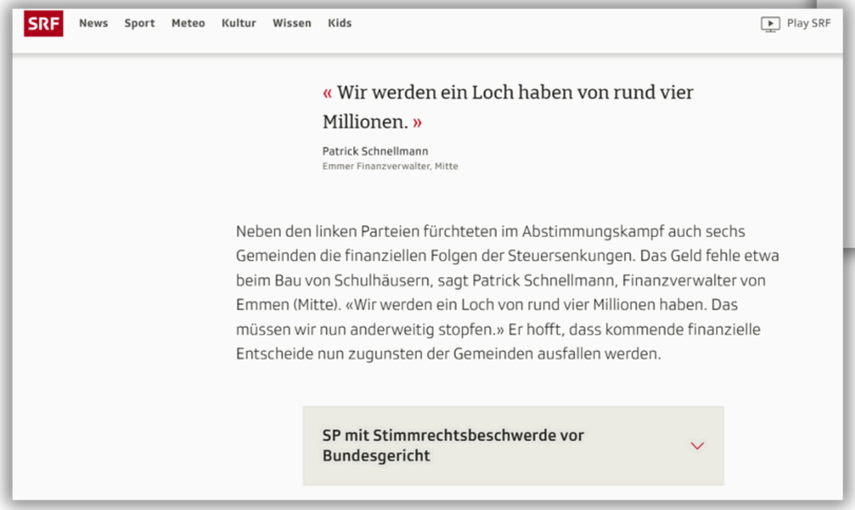
Der Steuerfuss in der Stadt Luzern sinkt von 1.65 auf 1.55 Einheiten: Das ist der tiefste Wert seit vielen Jahrzehnten. Auch innerhalb des Kantons gehört die Stadt nun zu den steuergünstigsten Gemeinden. In der näheren Umgebung haben nur Horw, Meggen und Root noch tiefere Steuern.

Taxes in the City of Lucerne Drop to Record Low

Voters have clearly approved the tax reduction to 1.55 units. Starting in 2025, residents of Lucerne will pay less in taxes than they have in decades.

(Luzerner Zeitung, December 15, 2024)

"We will have a shortfall of around four million."
Patrick Schnellmann
Emmen's Finance Administrator, Centre Party
(SRF, September 22, 2024)


SRF News Sport Meteo Kultur Wissen Kids Play SRF

« Wir werden ein Loch haben von rund vier Millionen. »

Patrick Schnellmann
Emmer Finanzverwalter, Mitte

Neben den linken Parteien fürchteten im Abstimmungskampf auch sechs Gemeinden die finanziellen Folgen der Steuersenkungen. Das Geld fehle etwa beim Bau von Schulhäusern, sagt Patrick Schnellmann, Finanzverwalter von Emmen (Mitte). «Wir werden ein Loch von rund vier Millionen haben. Das müssen wir nun anderweitig stopfen.» Er hofft, dass kommende finanzielle Entscheide nun zugunsten der Gemeinden ausfallen werden.

SP mit Stimmrechtsbeschwerde vor Bundesgericht


LUZERN INVEST PROMOTION

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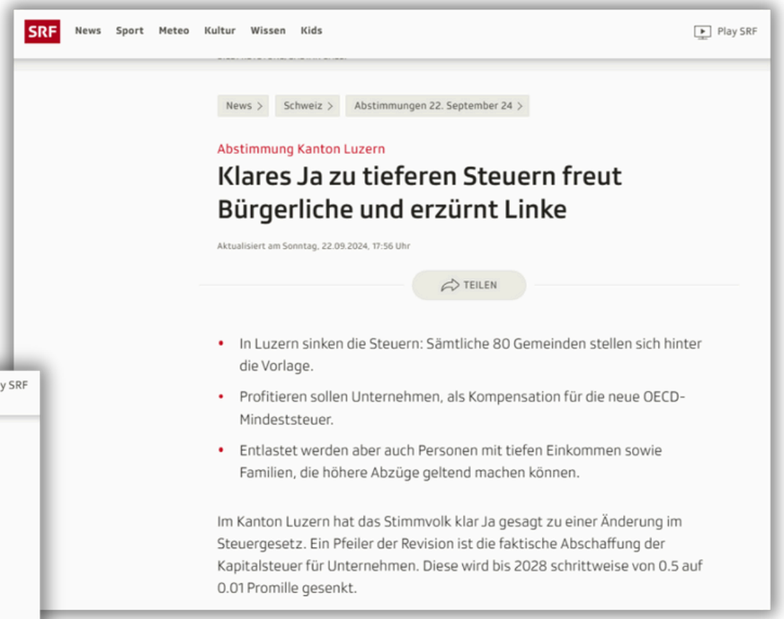
21.03.2023 | Reading-time: 3 min

More tax rate reductions than increases

Lucerne - Overall, 10 municipalities have lowered their tax rate for the current tax year, while 2 have increased it. The majority of the 80 municipalities in Lucerne are keeping their tax rates unchanged. Nearly 87 percent of Lucerne's population lives in a municipality with a municipal tax rate between 1.70 and 2.30 units.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Abstimmung Kanton Luzern

Klares Ja zu tieferen Steuern freut Bürgerliche und erzürnt Linke

Aktualisiert am Sonntag, 22.09.2024, 17:56 Uhr

TEILEN

- In Luzern sinken die Steuern: Sämtliche 80 Gemeinden stellen sich hinter die Vorlage.
- Profitieren sollen Unternehmen, als Kompensation für die neue OECD-Mindeststeuer.
- Entlastet werden aber auch Personen mit tiefen Einkommen sowie Familien, die höhere Abzüge geltend machen können.

Im Kanton Luzern hat das Stimmvolk klar Ja gesagt zu einer Änderung im Steuergesetz. Ein Pfeiler der Revision ist die faktische Abschaffung der Kapitalsteuer für Unternehmen. Diese wird bis 2028 schrittweise von 0.5 auf 0.01 Promille gesenkt.

Referendum in the Canton of Lucerne

Clear 'Yes' to Lower Taxes Delights the Right and Infuriates the Left

Taxes are going down in Lucerne: all 80 municipalities support the proposal.
(SRF, September 22, 2024)

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Timeline

2005 & 2008

- Bracket indexation
- MTRs lowered for low/middle incomes
- Offset bracket creep

2011

- Income tax progression flattened for high earners
- Further relief for middle incomes

2014

- Fiscal pressure
- Cantonal tax multiplier raised (1.5 → 1.6)

2020

- Harmonization for source-taxed foreign residents

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Research Question

What is the elasticity of taxable labor income in response to changes in marginal tax rates in Lucerne, and how does this vary across subgroups (e.g., income levels, gender, employment type)?

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What is ETI?

- A key parameter in optimal taxation theory (Feldstein, 1995; Saez et al., 2012).
- The percentage change in reported income resulting from a one percent change in the net-of-tax rate

$$\varepsilon = \frac{(1-\tau)}{z}\frac{\delta z}{\delta(1-\tau)}$$

- ε is the ETI
- z is the real taxable income
- $(1-\tau)$ is the net-of-tax rate

Methodology

2SLS regressions with instrumental variables derived from two-period lags of varying length

- Controls for mean reversion, income trends following the approach of:

Gruber & Saez (2002)
propose a DD strategy that employes IVs based on simulated tax rates holding income constant

Kleven & Schultz (2014)
propose to take other income types into account

Weber (2014)
proposes an alternative IV for the endogenous tax rates based on lags of base-year income

Data (I)

- **Anonymized microdata** provided by the Statistical Services of the canton of Lucerne - LUSTAT Statistik Luzern, 2024.
- **Before data refinement:**
  - 3,800,281 taxpayer-year obs.
  - 2005-2021
- **After data refinement:**
  - 890,343 taxpayer-year obs.
  - 2007-2021

LUSTAT Statistik Luzern (microdata)

152,988
households

Data (II)

- **Tax burden statistics** based on effective average cantonal and municipal tax liability rates across Lucerne's municipalities.
- Source: Federal Tax Administration, 2024.
- 2007–2021

Tax Burden Statistics by Canton and Municipality
estv.admin.ch

89,640
observations

80
municipalities

Until 2004, there were 107 municipalities.
As of 2025, 79 municipalities

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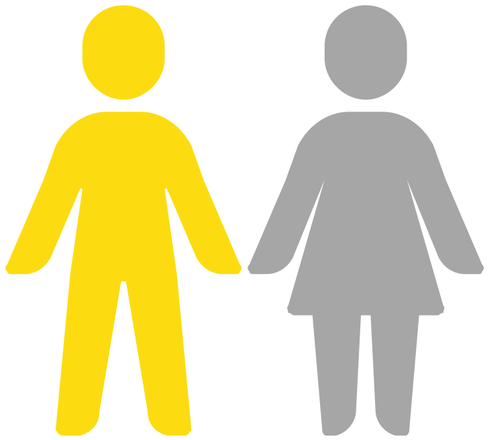
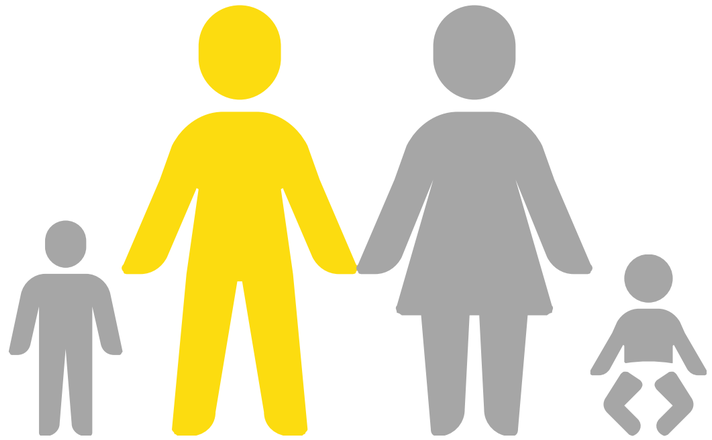
Constructing own tax simulator (I)

- **3 representative taxpayer profiles**

- single individual living alone, employed



- married couple (one earner) without children



- married couple (one earner) with two children

Constructing own tax simulator (II)

- **3 representative taxpayer profiles**
- 22-24 income bins ranging from CHF 12,500 to CHF 1 mln of labor income

Income tax
Married, single income, 2 children
Other/No religion
Total tax burden in %
2021

Canton	SFO Commu	Commune	15,000	20,00(	25,00	30,00	35,00	40,00	45,00	50,00	60,00	70,00	80,00	90,00	100,0(	125,0(	150,0(	175,0(	200,0(	250,0(	300,0(	400,0(	500,0(	1,000,0
LU	1051	Adligenswil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.51	3.34	4.73	5.79	6.78	8.95	10.82	12.61	14.64	17.97	20.18	22.95	24.61	27.93
LU	1021	Aesch (LU)	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.43	3.16	4.48	5.48	6.42	8.51	10.31	12.04	14.02	17.26	19.41	22.11	23.73	26.97
LU	1121	Alberswil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.56	3.47	4.92	6.03	7.05	9.28	11.20	13.03	15.11	18.50	20.75	23.58	25.27	28.66
LU	1122	Altbüron	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.58	3.51	4.98	6.10	7.14	9.40	11.32	13.18	15.26	18.68	20.94	23.78	25.49	28.90
LU	1123	Altishofen	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.39	3.07	4.35	5.33	6.24	8.29	10.05	11.76	13.71	16.91	19.03	21.69	23.29	26.48
LU	1023	Ballwil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.17	1.31	2.89	4.10	5.02	5.88	7.84	9.54	11.19	13.09	16.20	18.27	20.86	22.41	25.52
LU	1081	Beromünster	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.45	3.20	4.54	5.56	6.51	8.62	10.43	12.18	14.17	17.44	19.60	22.32	23.95	27.21
LU	1052	Buchrain	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.47	3.25	4.60	5.64	6.60	8.73	10.56	12.33	14.33	17.62	19.80	22.53	24.17	27.45
LU	1083	Buttisholz	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.49	3.29	4.67	5.72	6.69	8.84	10.69	12.47	14.48	17.79	19.99	22.74	24.39	27.69
LU	1082	Büron	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.51	3.34	4.73	5.79	6.78	8.95	10.82	12.61	14.64	17.97	20.18	22.95	24.61	27.93
LU	1125	Dagmersellen	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.45	3.20	4.54	5.56	6.51	8.62	10.43	12.18	14.17	17.44	19.60	22.32	23.95	27.21
LU	1053	Dierikon	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.45	3.20	4.54	5.56	6.51	8.62	10.43	12.18	14.17	17.44	19.60	22.32	23.95	27.21
LU	1001	Doppleschwand	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.62	3.60	5.11	6.26	7.31	9.62	11.58	13.46	15.57	19.03	21.33	24.20	25.93	29.38
LU	1054	Ebikon	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.47	3.25	4.60	5.64	6.60	8.73	10.56	12.33	14.33	17.62	19.80	22.53	24.17	27.45
LU	1127	Egolzwil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.51	3.34	4.73	5.79	6.78	8.95	10.82	12.61	14.64	17.97	20.18	22.95	24.61	27.93
LU	1084	Eich	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.17	1.24	2.72	3.85	4.71	5.53	7.40	9.03	10.63	12.47	15.49	17.50	20.02	21.53	24.55
LU	1024	Emmen	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.56	3.47	4.92	6.03	7.05	9.28	11.20	13.03	15.11	18.50	20.75	23.58	25.27	28.66
LU	1002	Entlebuch	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.54	3.42	4.86	5.95	6.96	9.17	11.07	12.89	14.95	18.32	20.56	23.37	25.05	28.42
LU	1025	Ermensee	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.54	3.42	4.86	5.95	6.96	9.17	11.07	12.89	14.95	18.32	20.56	23.37	25.05	28.42
LU	1026	Eschenbach (LU	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.17	1.28	2.81	3.97	4.86	5.71	7.62	9.29	10.91	12.78	15.85	17.88	20.44	21.97	25.03
LU	1010	Escholzmatt-Ma	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.51	3.34	4.73	5.79	6.78	8.95	10.82	12.61	14.64	17.97	20.18	22.95	24.61	27.93
LU	1128	Ettiswil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.53	3.38	4.79	5.87	6.87	9.06	10.94	12.75	14.80	18.15	20.37	23.16	24.83	28.17
LU	1129	Fischbach	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.62	3.60	5.11	6.26	7.31	9.62	11.58	13.46	15.57	19.03	21.33	24.20	25.93	29.38
LU	1004	Flühli	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.58	3.51	4.98	6.10	7.14	9.40	11.32	13.18	15.26	18.68	20.94	23.78	25.49	28.90
LU	1085	Geuensee	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.54	3.42	4.86	5.95	6.96	9.17	11.07	12.89	14.95	18.32	20.56	23.37	25.05	28.42
LU	1055	Gisikon	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.35	2.98	4.22	5.17	6.06	8.07	9.80	11.48	13.40	16.55	18.65	21.27	22.85	26.00
LU	1056	Greppen	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.45	3.20	4.54	5.56	6.51	8.62	10.43	12.18	14.17	17.44	19.60	22.32	23.95	27.21
LU	1131	Grossdietwil	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.62	3.60	5.11	6.26	7.31	9.62	11.58	13.46	15.57	19.03	21.33	24.20	25.93	29.38
LU	1086	Grosswangen	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.45	3.20	4.54	5.56	6.51	8.62	10.43	12.18	14.17	17.44	19.60	22.32	23.95	27.21
LU	1005	Hasle (LU)	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.62	3.60	5.11	6.26	7.31	9.62	11.58	13.46	15.57	19.03	21.33	24.20	25.93	29.38
LU	1132	Hergiswil bei W	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.19	1.54	3.42	4.86	5.95	6.96	9.17	11.07	12.89	14.95	18.32	20.56	23.37	25.05	28.42
LU	1088	Hildisrieden	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.35	2.98	4.22	5.17	6.06	8.07	9.80	11.48	13.40	16.55	18.65	21.27	22.85	26.00
LU	1030	Hitzkirch	0.33	0.25	0.20	0.17	0.14	0.13	0.11	0.18	1.47	3.25	4.60	5.64	6.60	8.73	10.56	12.33	14.33	17.62	19.80	22.53	24.17	27.45

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Constructing own tax simulator (III)

- **3 representative taxpayer profiles**
- 22-24 income bins ranging from CHF 12,500 to CHF 1 mln of labor income
- 15 years of tax schedules: 2007-2021

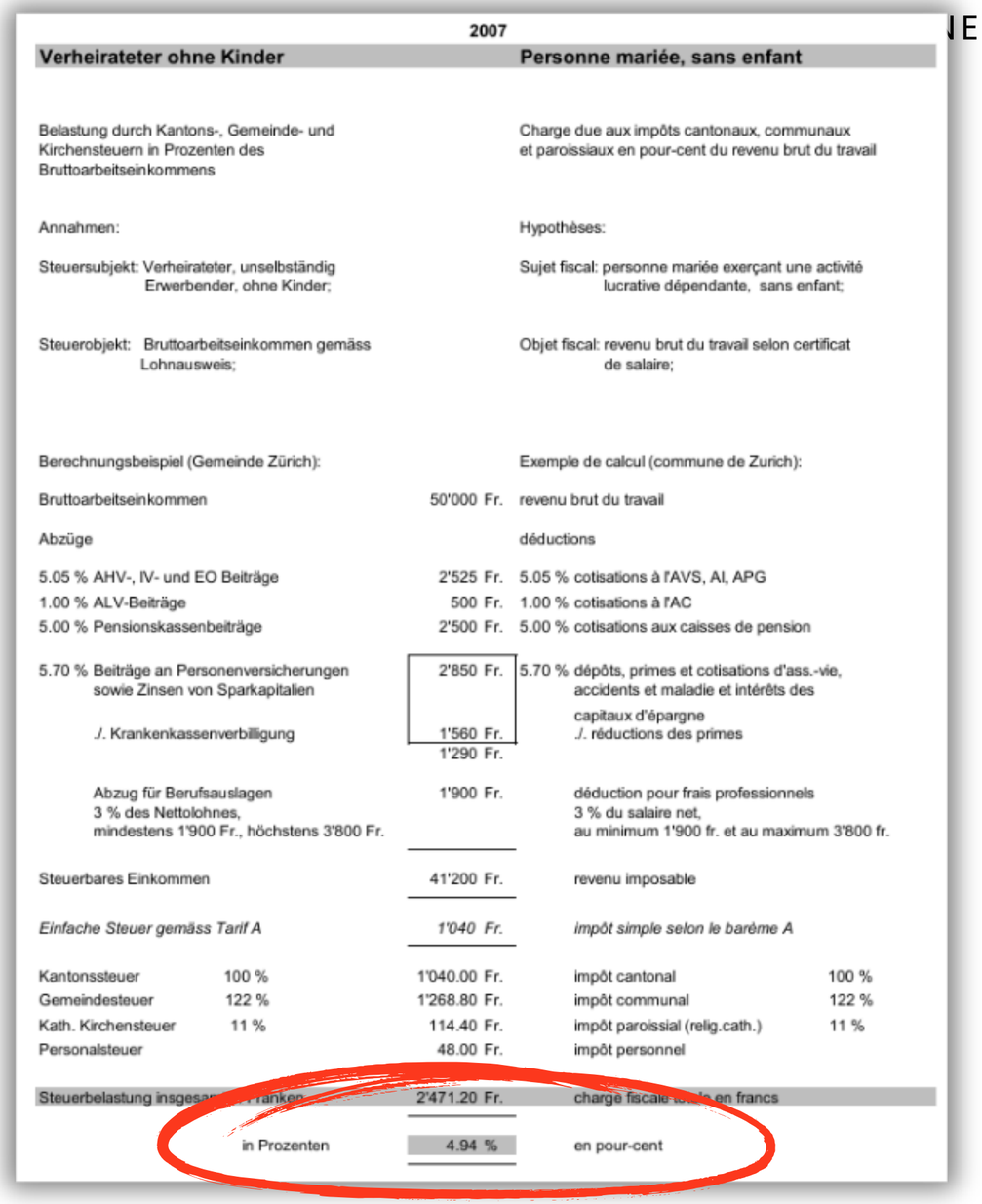
Bruttoarbeitseinkommen: Belastung durch Kantons-, Gemeinde- und Kirchensteuern in Prozenten
Lediger , unselbständig Erwerbender mit eigenem Haushalt

Gemeinden	Bruttoarbeitseinkommen in 1'000 Franken															
	20	25	30	35	40	50	60	70	80	90	100	150	200	300	500	1'000
Kanton Luzern	**3.18**	**5.84**	**7.70**	**8.91**	**10.03**	**11.74**	**13.01**	**14.02**	**14.89**	**15.61**	**16.17**	**17.96**	**19.21**	**20.61**	**21.57**	**21.83**
Luzern	3.12	5.71	7.52	8.71	9.79	11.46	12.71	13.69	14.54	15.24	15.78	17.54	18.78	20.35	21.68	22.00
Adligenswil	3.18	5.83	7.69	8.89	10.01	11.71	12.98	13.99	14.85	15.58	16.13	17.92	19.19	20.80	22.03	22.26
Ballwil	2.89	5.27	6.94	8.03	9.03	10.56	11.71	12.61	13.39	14.04	14.54	16.15	17.29	18.75	19.97	20.26
Beromünster	3.33	6.12	8.07	9.34	10.51	12.30	13.64	14.70	15.61	16.37	16.95	18.83	20.16	21.72	22.03	22.26
Buchrain	3.20	5.87	7.74	8.96	10.08	11.80	13.08	14.09	14.97	15.69	16.25	18.06	19.33	20.96	22.03	22.26
Buttisholz	3.41	6.27	8.27	9.57	10.77	12.61	13.98	15.07	16.00	16.78	17.38	19.31	20.67	21.72	22.03	22.26
Dagmersellen	3.26	5.98	7.89	9.13	10.27	12.02	13.33	14.36	15.25	15.99	16.56	18.40	19.70	21.36	22.03	22.26
Ebikon	3.16	5.79	7.63	8.83	9.94	11.63	12.89	13.89	14.75	15.47	16.02	17.80	19.05	20.65	22.00	22.26
Emmen	3.22	5.91	7.80	9.02	10.15	11.88	13.17	14.20	15.07	15.81	16.37	18.19	19.47	21.11	22.03	22.26
Entlebuch	3.58	6.59	8.71	10.08	11.35	13.28	14.73	15.88	16.86	17.68	18.31	20.35	21.41	21.72	22.03	22.26
Eschenbach	2.87	5.23	6.89	7.97	8.96	10.48	11.62	12.51	13.29	13.93	14.42	16.02	17.16	18.60	19.81	20.10
Escholzmatt	3.58	6.59	8.71	10.08	11.35	13.28	14.73	15.88	16.86	17.68	18.31	20.35	21.41	21.72	22.03	22.26
Grosswangen	3.50	6.46	8.52	9.87	11.11	13.00	14.42	15.54	16.50	17.31	17.92	19.91	21.32	21.72	22.03	22.26
Hitzkirch	3.24	5.94	7.83	9.07	10.20	11.94	13.24	14.26	15.14	15.88	16.44	18.27	19.56	21.21	22.03	22.26
Hochdorf	3.16	5.79	7.63	8.83	9.94	11.63	12.89	13.89	14.75	15.47	16.02	17.80	19.05	20.65	22.00	22.26
Hohenrain	3.58	6.59	8.71	10.08	11.35	13.28	14.73	15.88	16.86	17.68	18.31	20.35	21.41	21.72	22.03	22.26
Horw	2.95	5.38	7.09	8.20	9.22	10.79	11.96	12.88	13.68	14.34	14.85	16.50	17.66	19.15	20.40	20.69
														1.21	22.03	22.26
														1.61	22.03	22.26
														1.72	22.03	22.26
														5.73	16.76	17.00
														1.72	22.03	22.26
														1.36	22.03	22.26
														1.51	22.03	22.26
														1.72	22.03	22.26
														0.65	22.00	22.26
														1.72	22.03	22.26
														1.36	22.03	22.26
														1.72	22.03	22.26
														1.11	22.03	22.26

Kanton Luzern																				
Luzern	0.25	0.44	1.79	3.67	4.71	5.52	6.24	7.64	8.74	9.57	10.44	11.24	13.97	15.47	17.27	18.37	19.02	19.44		
Adligenswil	0.25	0.45	1.83	3.76	4.82	5.65	6.39	7.82	8.95	9.79	10.69	11.50	14.30	15.84	17.68	18.80	19.47	19.90		
Ballwil	0.25	0.42	1.64	3.34	4.28	5.01	5.66	6.92	7.92	8.67	9.46	10.18	12.65	14.01	15.64	16.63	17.22	17.60		
Beromünster	0.25	0.46	1.92	3.95	5.07	5.95	6.72	8.23	9.42	10.31	11.25	12.11	15.06	16.69	18.63	19.81	20.51	20.96		
Buchrain	0.25	0.46	1.88	3.87	4.97	5.82	6.58	8.06	9.22	10.10	11.02	11.86	14.75	16.34	18.24	19.39	20.08	20.52		
Buttisholz	0.25	0.48	2.01	4.15	5.33	6.25	7.07	8.66	9.91	10.85	11.84	12.75	15.86	17.56	19.61	20.85	21.59	22.06		
Dagmersellen	0.25	0.43	1.71	3.50	4.49	5.26	5.94	7.27	8.32	9.10	9.94	10.69	13.29	14.72	16.43	17.47	18.09	18.49		
Ebikon	0.25	0.45	1.83	3.77	4.84	5.67	6.41	7.84	8.97	9.82	10.72	11.54	14.35	15.89	17.74	18.86	19.53	19.96		
Emmen	0.25	0.46	1.90	3.91	5.02	5.89	6.66	8.15	9.33	10.21	11.14	11.99	14.91	16.52	18.44	19.61	20.30	20.75		
Entlebuch	0.25	0.49	2.12	4.39	5.64	6.62	7.49	9.17	10.50	11.49	12.55	13.50	16.80	18.61	20.77	21.91	22.02	22.26		
Eschenbach	0.25	0.42	1.65	3.37	4.32	5.06	5.72	6.99	8.00	8.76	9.56	10.28	12.79	14.16	15.80	16.80	17.40	17.78		
Escholzmatt	0.25	0.48	2.03	4.20	5.40	6.33	7.16	8.76	10.03	10.98	11.98	12.90	16.04	17.77	19.84	21.10	21.84	22.26		
Ettiswil	0.25	0.48	1.99	4.12	5.30	6.21	7.02	8.60	9.84	10.77	11.76	12.66	15.74	17.44	19.47	20.70	21.43	21.91		
Grosswangen	0.25	0.48	2.02	4.17	5.36	6.29	7.11	8.71	9.97	10.92	11.91	12.82	15.95	17.67	19.72	20.97	21.71	22.20		
Hitzkirch	0.25	0.46	1.88	3.86	4.96	5.81	6.57	8.05	9.21	10.08	11.00	11.84	14.73	16.31	18.21	19.36	20.05	20.49		
Hochdorf	0.25	0.45	1.81	3.73	4.79	5.61	6.34	7.76	8.88	9.72	10.61	11.42	14.20	15.72	17.55	18.66	19.33	19.75		
Hohenrain	0.25	0.47	1.99	4.10	5.27	6.18	6.99	8.56	9.79	10.72	11.70	12.60	15.67	17.35	19.37	20.60	21.33	21.80		
Horw	0.25	0.43	1.72	3.53	4.53	5.30	5.99	7.33	8.39	9.18	10.02	10.78	13.41	14.85	16.57	17.62	18.25	18.65		
Kriens	0.25	0.46	1.86	3.84	4.92	5.77	6.52	7.98	9.14	10.00	10.92	11.75	14.61	16.18	18.07	19.21	19.89	20.33		
Littau	0.25	0.47	1.94	4.00	5.13	6.02	6.81	8.33	9.54	10.44	11.39	12.26	15.25	16.89	18.86	20.05	20.76	21.22		
Malters	0.25	0.49	2.07	4.28	5.51	6.46	7.30	8.94	10.24	11.21	12.24	13.17	16.38	18.15	20.26	21.54	22.02	22.26		
Meggen	0.25	0.40	1.46	2.97	3.80	4.44	5.01	6.13	7.01	7.67	8.36	9.00	11.18	12.38	13.82	14.70	15.22	15.55		
Menznau	0.25	0.48	2.03	4.20	5.40	6.33	7.16	8.76	10.03	10.98	11.98	12.90	16.04	17.77	19.84	21.10	21.84	22.26		
Nebikon	0.25	0.45	1.81	3.72	4.78	5.59	6.33	7.74	8.86	9.70	10.58	11.39	14.16	15.68	17.51	18.61	19.27	19.70		
Neuenkirch	0.25	0.47	1.98	4.08	5.25	6.15	6.96	8.52	9.75	10.67	11.65	12.53	15.59	17.27	19.28	20.50	21.23	21.70		
Nottwil	0.25	0.46	1.89	3.89	5.00	5.86	6.62	8.11	9.28	10.16	11.09	11.93	14.84	16.43	18.35	19.51	20.20	20.65		
Oberkirch	0.25	0.45	1.81	3.72	4.78	5.59	6.33	7.74	8.86	9.70	10.58	11.39	14.16	15.68	17.51	18.61	19.27	19.70		
Pfaffnau	0.25	0.49	2.06	4.27	5.49	6.44	7.28	8.92	10.21	11.18	12.20	13.13	16.34	18.09	20.20	21.48	22.02	22.26		
Reiden	0.25	0.46	1.88	3.86	4.96	5.81	6.57	8.05	9.21	10.08	11.00	11.84	14.73	16.31	18.21	19.36	20.05	20.49		
Rickenbach	0.25	0.47	1.94	4.01	5.15	6.03	6.82	8.35	9.56	10.47	11.42	12.29	15.29	16.94	18.91	20.10	20.82	21.28		
Root	0.25	0.44	1.77	3.63	4.65	5.45	6.16	7.54	8.62	9.44	10.30	11.08	13.78	15.27	17.04	18.12	18.76	19.18		
Rothenburg	0.25	0.45	1.80	3.70	4.75	5.57	6.29	7.70	8.81	9.64	10.52	11.33	14.09	15.60	17.41	18.52	19.17	19.60		
Ruswil	0.25	0.48	2.03	4.21	5.41	6.34	7.17	8.78	10.05	11.01	12.01	12.93	16.08	17.81	19.89	21.14	21.89	22.26		
Schenkon	0.25	0.41	1.59	3.24	4.16	4.86	5.50	6.72	7.69	8.41	9.18	9.87	12.28	13.60	15.18	16.13	16.71	17.07		
Schötz	0.25	0.47	1.99	4.11	5.28	6.19	7.01	8.58	9.82	10.75	11.73	12.63	15.71	17.40	19.42	20.65	21.38	21.85		
Schüpfheim	0.25	0.49	2.10	4.34	5.58	6.54	7.40	9.07	10.38	11.37	12.40	13.35	16.61	18.40	20.54	21.84	22.02	22.26		
Sempach	0.25	0.43	1.71	3.50	4.49	5.26	5.94	7.27	8.32	9.10	9.94	10.69	13.29	14.72	16.43	17.47	18.09	18.49		
Sursee	0.25	0.45	1.85	3.80	4.87	5.71	6.46	7.90	9.04	9.90	10.81	11.63	14.46	16.02	17.88	19.01	19.69	20.12		
Triengen	0.25	0.45	1.80	3.69	4.74	5.55	6.28	7.68	8.79	9.62	10.50	11.30	14.05	15.56	17.37	18.47	19.12	19.54		
Weggis	0.25	0.41	1.59	3.24	4.16	4.86	5.50	6.72	7.69	8.41	9.18	9.87	12.28	13.60	15.18	16.13	16.71	17.07		
Willisau	0.25	0.47	1.93	3.99	5.12	6.00	6.79	8.31	9.51	10.41	11.37	12.23	15.22	16.85	18.81	20.00	20.71	21.17		
Wolhusen	0.25	0.49	2.07	4.29	5.52	6.47	7.32	8.96	10.26	11.24	12.26	13.20	16.42	18.19	20.31	21.59	22.02	22.26		

Constructing own tax simulator (IV)

- **3 representative taxpayer profiles**
- 22-24 income bins ranging from CHF 12,500 to CHF 1 mln of labor income
- 15 years of tax schedules: 2007-2021
- Standard deductions
  - for social security (AHV/IV/EO),
  - unemployment insurance (ALV), occupational pensions (BVG),
  - insurance premiums,
  - professional expenses,
  - child deductions where applicable.



2007

Verheirateter ohne Kinder			Personne mariée, sans enfant
Belastung durch Kantons-, Gemeinde- und Kirchensteuern in Prozenten des Bruttoarbeitseinkommens			Charge due aux impôts cantonaux, communaux et paroissiaux en pour-cent du revenu brut du travail
Annahmen:			Hypothèses:
Steuersubjekt: Verheirateter, unselbständig Erwerbender, ohne Kinder;			Sujet fiscal: personne mariée exerçant une activité lucrative dépendante, sans enfant;
Steuerobjekt: Bruttoarbeitseinkommen gemäss Lohnausweis;			Objet fiscal: revenu brut du travail selon certificat de salaire;
Berechnungsbeispiel (Gemeinde Zürich):			Exemple de calcul (commune de Zurich):
Bruttoarbeitseinkommen		50'000 Fr.	revenu brut du travail
Abzüge			déductions
5.05 % AHV-, IV- und EO Beiträge		2'525 Fr.	5.05 % cotisations à l'AVS, AI, APG
1.00 % ALV-Beiträge		500 Fr.	1.00 % cotisations à l'AC
5.00 % Pensionskassenbeiträge		2'500 Fr.	5.00 % cotisations aux caisses de pension
5.70 % Beiträge an Personenversicherungen sowie Zinsen von Sparkapitalien		2'850 Fr.	5.70 % dépôts, primes et cotisations d'ass.-vie, accidents et maladie et intérêts des capitaux d'épargne
./. Krankenkassenverbilligung		1'560 Fr.	./. réductions des primes
		1'290 Fr.	
Abzug für Berufsauslagen 3 % des Nettolohnes, mindestens 1'900 Fr., höchstens 3'800 Fr.		1'900 Fr.	déduction pour frais professionnels 3 % du salaire net, au minimum 1'900 fr. et au maximum 3'800 fr.
Steuerbares Einkommen		41'200 Fr.	revenu imposable
Einfache Steuer gemäss Tarif A		*1'040 Fr.*	*impôt simple selon le barème A*
Kantonssteuer	100 %	1'040.00 Fr.	impôt cantonal 100 %
Gemeindesteuer	122 %	1'268.80 Fr.	impôt communal 122 %
Kath. Kirchensteuer	11 %	114.40 Fr.	impôt paroissial (relig.cath.) 11 %
Personalsteuer		48.00 Fr.	impôt personnel
Steuerbelastung insgesamt in Franken		2'471.20 Fr.	charge fiscale totale en francs
in Prozenten		4.94 %	en pour-cent

Descriptive Statistics

Avg Gross Labor Income (Annual)

CHF 90,600

Avg Marginal Tax Rate

17.5%

Avg Net-of-Tax Rate

82.5%

Avg Total Tax Burden

9%

Avg Age

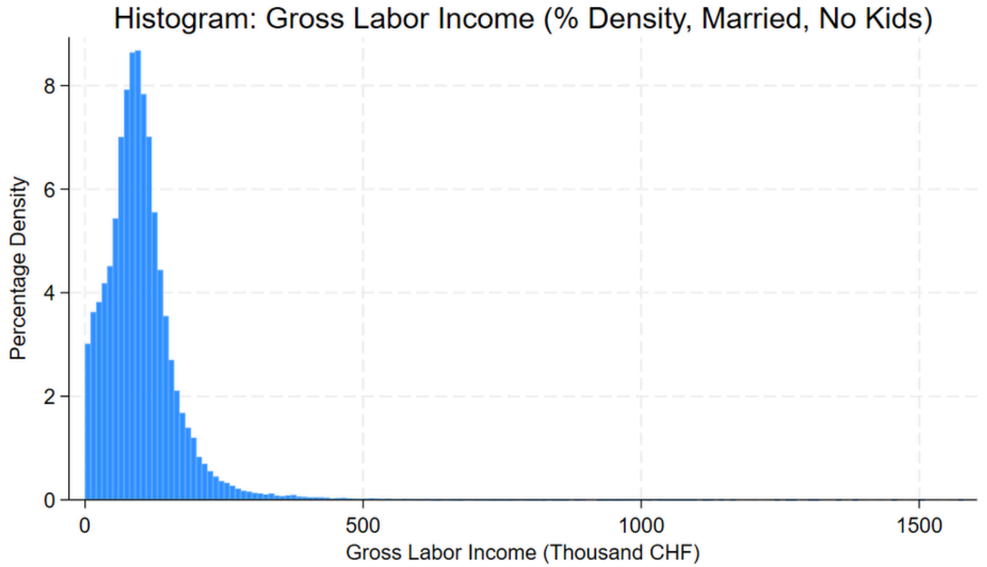
45.8Y

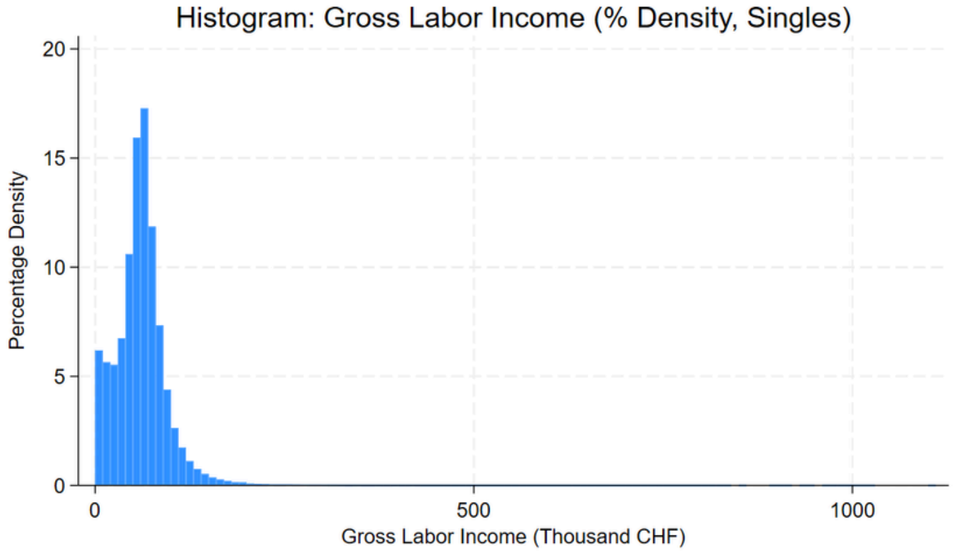
Variable	All positive GLI		GLI above CHF 10 000.-	
	Mean (1)	Std.Dev. (2)	Mean (3)	Std.Dev. (4)
Gross labor income, z, CHF (before deductions)	90609.24	66116.02	93603.73	65264.69
Marginal tax rate (observed), τ, %	17.45347	14.75651	17.99166	14.70979
Net-of-tax rate (observed), $(1-\tau)$, %	82.54653	14.75651	82.00834	14.70979
Total tax burden, $T(z)$, % (cantonal, communal, church, personal tax liability)	9.129058	3.956266	9.435889	3.6634
Female (dummy)	.2140843	.4101858	.2064705	.4047724
Age of the first-named person on the tax return (as of reporting year)	45.79714	11.69412	45.81337	11.53751
Number of dependent children	.6425787	1.038259	.663117	1.048372
Single (dummy) (includes single, separated, divorced, widowed)	.4855697	.499792	.4732109	.4992822
Married (dummy)	.5144303	.499792	.5267891	.4992822
Observations	890343		758525	

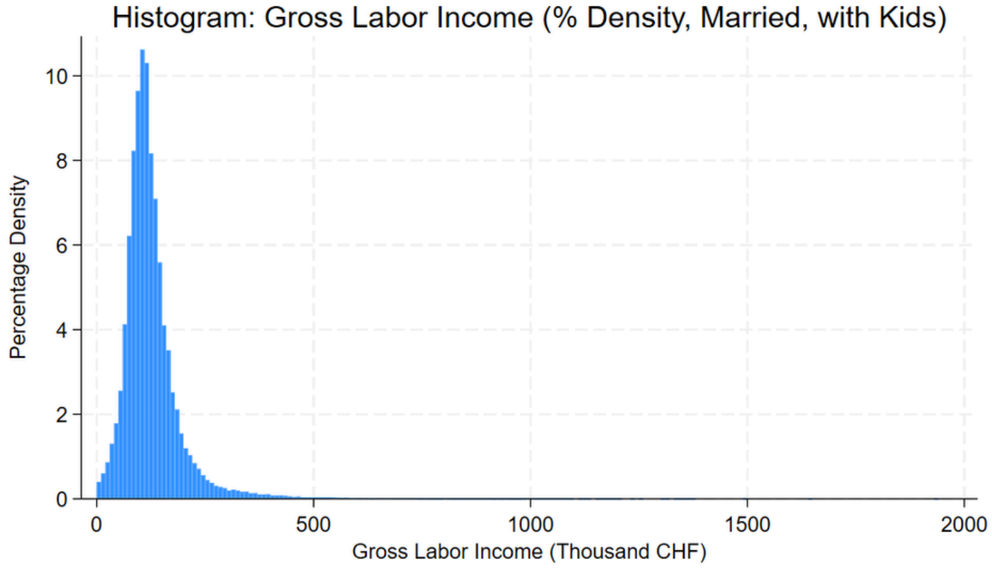
Notes: This table presents summary statistics for the main variables used in the analysis for one-year differences. Columns (1) and (2) report means and standard deviations (in parentheses) for all taxpayer-year observations with strictly positive GLI. Columns (3) and (4) restrict the sample further to observations with GLI exceeding CHF 10,000.
Source: Author's calculations based on administrative tax records from the canton of Lucerne, 2007–2021.

Household composition shapes the income curve

- **Median Gross Labor Income by Household Type (in CHF):**
  - Married, with children: 112,162
  - Married, without children: 96,999
  - Single: 59,403

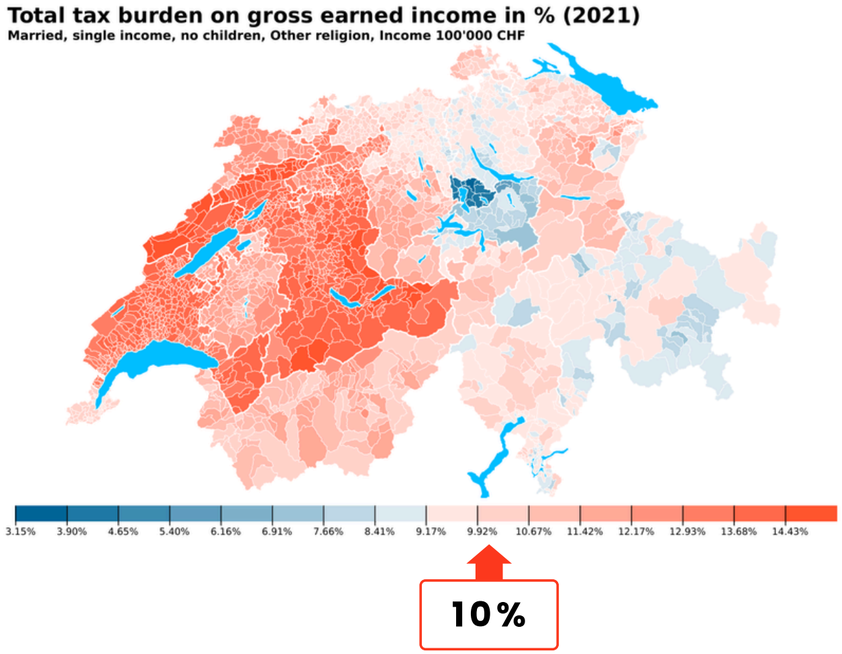


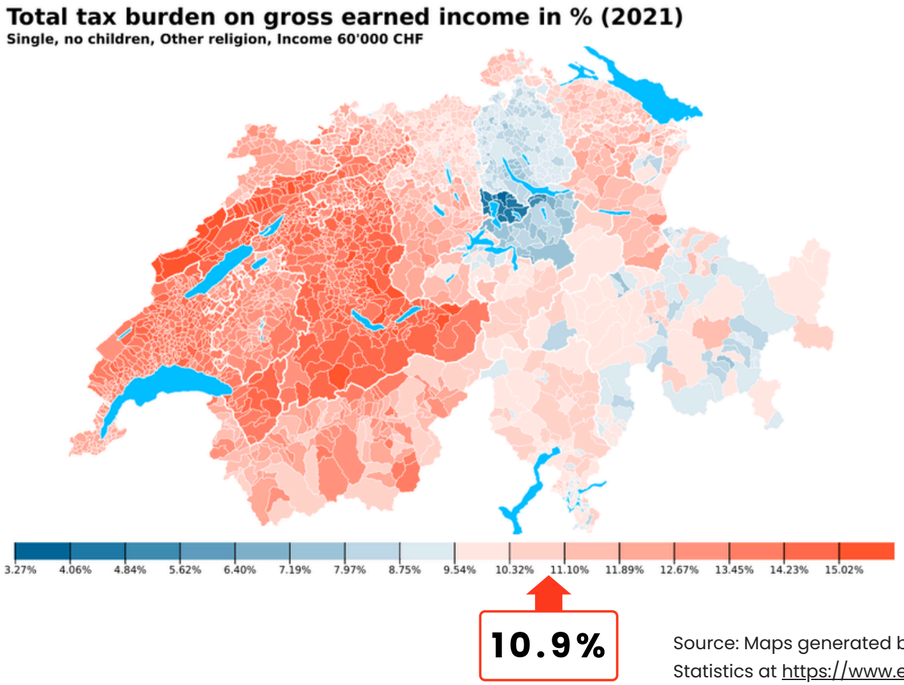


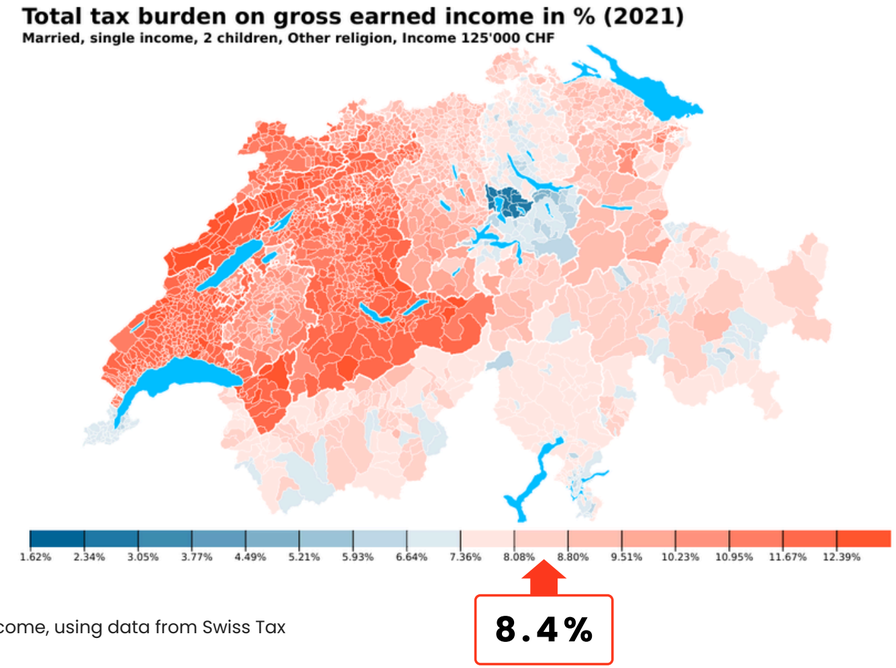


Lucerne ranks slightly above the national average in terms of tax burden

- **Median total tax burden by household type (in %):**
  - Married, with children: 8.4
  - Married, without children: 10
  - Single: 10.9

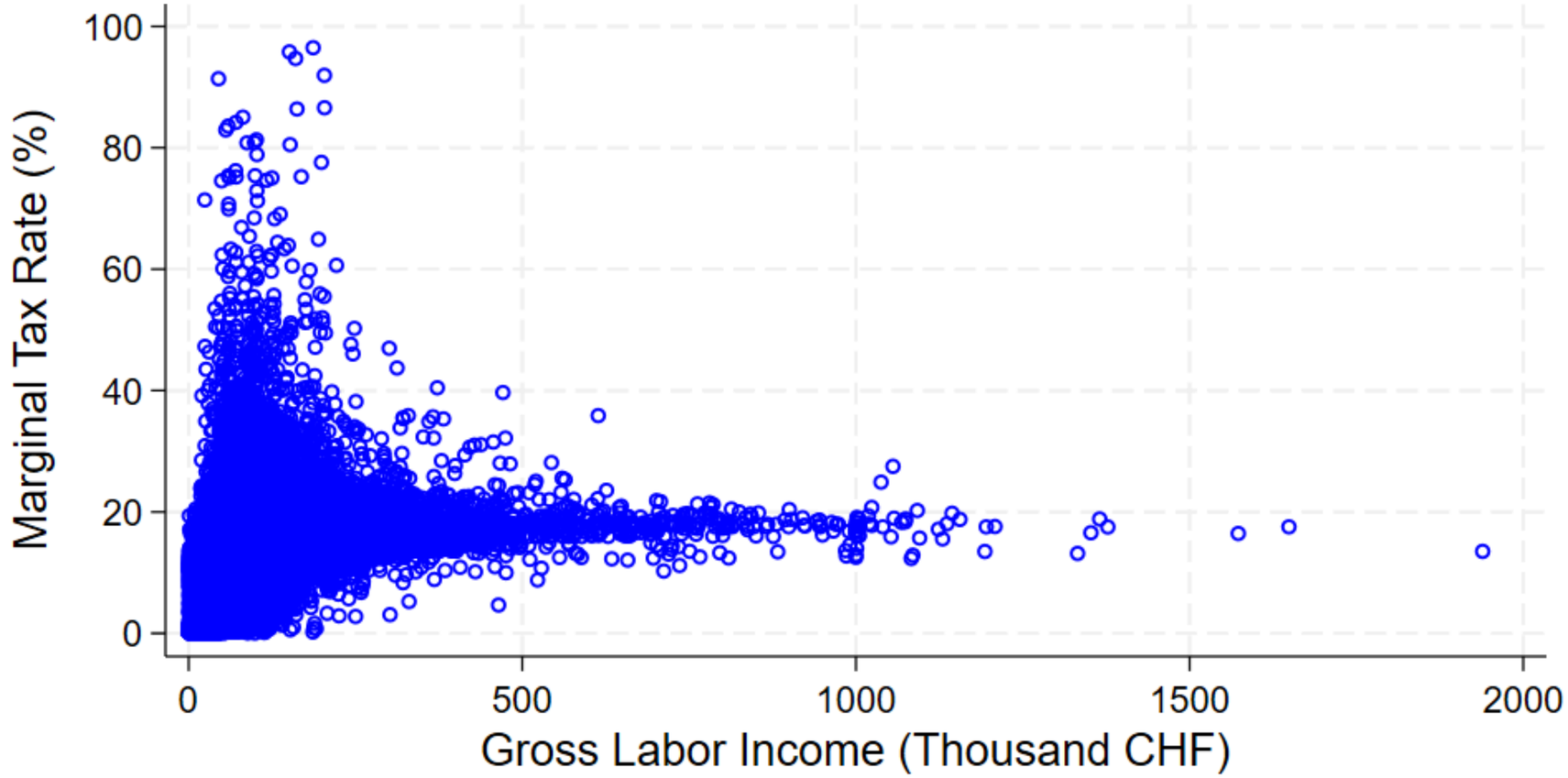






Source: Maps generated based on 2021 tax rates for gross labor income, using data from Swiss Tax Statistics at https://www.estv.admin.ch/estv/en/home/fta/

Marginal tax rates by gross labor income



Model (I)

$$\ln\left(\frac{z_{i,t+s}}{z_{it}}\right) = \varepsilon \ln\left(\frac{1-\tau_{i,t+s}}{1-\tau_{it}}\right) + \eta \ln\left(\frac{z_{i,t+s}-T_{t+s}(z_{i,t+s})}{z_{it}-T_t(z_{it})}\right) + \epsilon,$$

where z_{it} income for taxpayer *i* in year *t*, and $z_{i,t+s}$ - in year *t+s*, $s \in \{1,2,3\}$

ε elasticity with respect to the net-of-tax rate

η income effect

τ_{it} marginal tax rate for taxpayer *i* in year *t*

$1-\tau_{it}$ their net-of-tax rate in year *t*, and $1-\tau_{i,t+s}$ - in year *t+s* respectively

$T_t(z_{it})$ their tax burden in year *t*

$z_{it}-T_t(z_{it})$ their after-tax income in year *t*, and $z_{i,t+s}-T_{t+s}(z_{i,t+s})$ - in year *t+s* respectively

ϵ error term

Model (II)

$$\ln\left(\frac{z_{i,t+s}}{z_{it}}\right) = \beta_0 + \varepsilon \ln\left(\frac{1-\tau_{i,t+s}}{1-\tau_{it}}\right) + \eta \ln\left(\frac{z_{i,t+s} - T_{t+s}(z_{i,t+s})}{z_{it} - T_t(z_{it})}\right) +$$

$$\beta_1 \ln(z_{it}) + \sum_k \beta_{2k} married_{ik} + \sum_j \beta_{3j} year_j + + \sum_{m=1}^{M} \beta_{4m} spline_m + \mu_i + \epsilon$$

where $\ln(z_{it})$	the log of base-year income
$\sum_{m=1}^{M} spline_m$	a 5-piece or a 10-piece spline in the log of base-year income
$married_{ik}$	dummy for marital status for taxpayer *i*
μ_i	household-fixed effects
$\sum_j year_j$	year-fixed effects

Instrumental variables

- **IV1:** Predicted log change in net-of-tax rate

$$\ln\left(\frac{1-\tau^{p}_{i,t+s}}{1-\tau_{it}}\right)$$

$$\tau^{p}_{i,t+s} = \frac{T_{t+s}(z_{i,t}+\delta) - T_{t+s}(z_{i,t})}{\delta}$$

$$\delta \in \{1000, 2000, 5000\}$$

- **IV2:** Predicted log change in after-tax income

$$\ln\left(\frac{R^{p}_{i,t+s}}{R_{i,t}}\right)$$

$$R^{p}_{i,t+s} = \tau^{p}_{i,t+s} z^{p}_{i,t+s} - T_{t+s}(z^{p}_{i,t+s})$$

Results: First stage (IV)

Table 2: First stage estimates for basic model without income effect controls (increment of CHF 1,000)

	1-Year lag $\Delta ln(1-\tau)$ (1)	2-Year lag $\Delta ln(1-\tau)$ (2)	3-Year lag $\Delta ln(1-\tau)$ (3)
$\Delta ln(1-\tau^{p,1\ lag})$	0.774***	0.0326***	0.0405***
	(0.00364)	(0.00167)	(0.00222)
Observations	654,289	624,677	612,971
First stage R^2	0.409	0.093	0.120
Shea's partial R^2	0.3298	0.0000	0.0001
First stage F-statistic	385.816	85.7243	15.5558
$\Delta ln(1-\tau^{p,2\ lag})$	-0.0334***	0.699***	-0.0159***
	(0.00255)	(0.00422)	(0.00250)
Observations	513,273	536,023	509,792
First stage R^2	0.052	0.395	0.131
Shea's partial R^2	0.0001	0.2923	0.0001
First stage F-statistic	10.6513	821.35	10.7936
$\Delta ln(1-\tau^{p,3\ lag})$	-0.0122***	-0.0443***	0.685***
	(0.00262)	(0.00275)	(0.00457)
Observations	412,061	414,829	430,591
First stage R^2	0.046	0.117	0.402
Shea's partial R^2	0.0000	0.0001	0.2774
First stage F-statistic	1.16193	17.1509	689.285

Notes: Robust standard errors, clustered at the household level, are reported in parentheses. All specifications include household- and year-fixed effects.
*** $p<0.01$, ** $p<0.05$, * $p<0.10$.

Results: Modest baseline ETLI of 0.002–0.02

Table 3: 2SLS estimates for basic model without income effect control (increment of CHF 1,000)

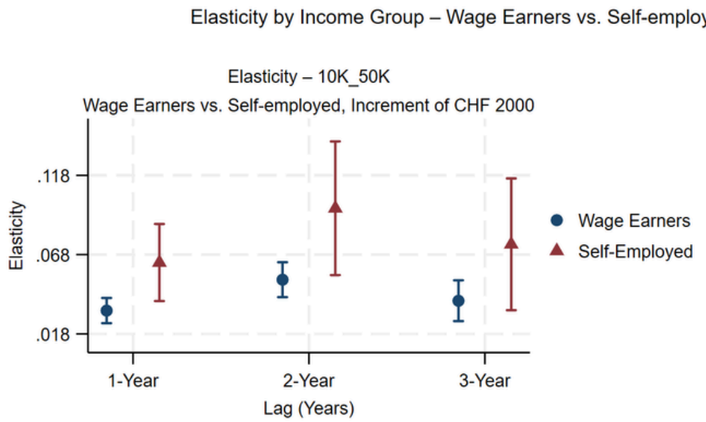
	1-year differences				2-year differences				3-year differences			
Income controls	None	Log income	Log income 5-piece spline	Log income 10-piece spline	None	Log income	Log income 5-piece spline	Log income 10-piece spline	None	Log income	Log income 5-piece spline	Log income 10-piece spline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta ln(1-\tau)$	0.00207**	0.00468***	-0.00189**	-0.00104	0.00811***	0.0132***	0.00346**	0.00450***	0.0101***	0.0168***	0.00712***	0.00804***
	(0.000847)	(0.000861)	(0.000848)	(0.000844)	(0.00150)	(0.00151)	(0.00149)	(0.00149)	(0.00189)	(0.00190)	(0.00188)	(0.00187)
Married (dummy)	-0.0187***	0.0465***	0.00499***	0.00674***	-0.0346***	0.0712***	0.0240***	0.0255***	-0.0422***	0.0861***	0.0409***	0.0423***
	(0.000961)	(0.00140)	(0.00124)	(0.00125)	(0.00128)	(0.00177)	(0.00160)	(0.00160)	(0.00156)	(0.00207)	(0.00192)	(0.00193)
Log (income) control		-0.0913***				-0.149***				-0.181***		
		(0.00187)				(0.00231)				(0.00266)		
1st spline control			-0.180***	-0.229***			-0.260***	-0.304***			-0.294***	-0.336***
			(0.00388)	(0.00573)			(0.00481)	(0.00692)			(0.00551)	(0.00768)
2nd spline control			0.202***	0.124***			0.156***	0.0402**			0.116***	0.0177
			(0.00837)	(0.0128)			(0.0103)	(0.0162)			(0.0115)	(0.0187)
3rd spline control			-0.0541***	-0.0427***			-0.0988***	-0.0617***			-0.146***	-0.112***
			(0.00589)	(0.0163)			(0.00825)	(0.0216)			(0.0102)	(0.0255)
4th spline control			0.0620***	0.0630***			0.0358***	0.0165			0.0187*	-0.00272
			(0.00520)	(0.0174)			(0.00739)	(0.0232)			(0.00955)	(0.0276)
5th spline control			-0.0984***	-0.00474			-0.122***	-0.0494**			-0.158***	-0.0962***
			(0.00412)	(0.0155)			(0.00481)	(0.0225)			(0.00596)	(0.0275)
6th spline control				-0.00610				-0.0461**				-0.0989***
				(0.0145)				(0.0222)				(0.0284)
7th spline control				0.0261*				-0.0139				-0.0377
				(0.0136)				(0.0215)				(0.0288)
8th spline control				-0.0359***				-0.0446**				-0.0519**
				(0.0115)				(0.0184)				(0.0244)
9th spline control				0.0500***				0.0147				-0.0261
				(0.00959)				(0.0136)				(0.0178)
10th spline control				-0.135***				-0.156***				-0.192***
				(0.00657)				(0.00744)				(0.00909)
Observations	673,157	673,157	673,157	673,157	552,971	552,971	552,971	552,971	445,730	445,730	445,730	445,730

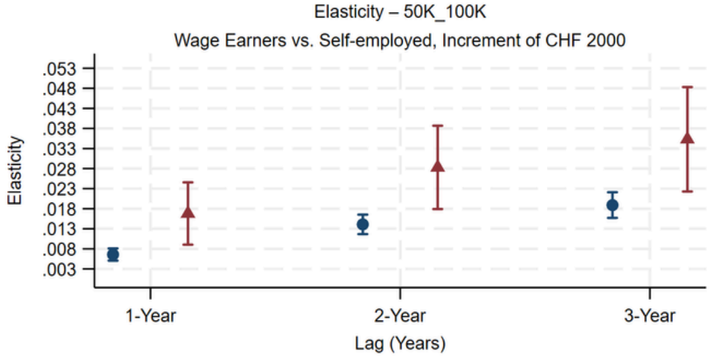
Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates from 2SLS regressions. GLI is above zero. All regressions include married (dummy), household- and year-fixed effects for each base year.

Results: Wage earners vs. self-employed

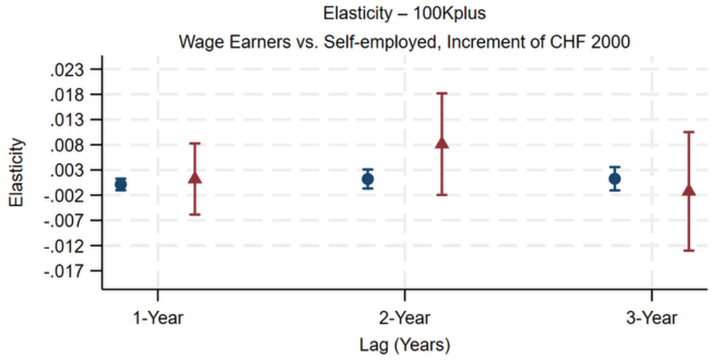
- **Self-employed individuals exhibit significantly higher elasticities** than wage earners at low and middle income levels — but the pattern reverses at the top of the income distribution.

up to 0.1 vs. up to 0.05





up to 0.04 vs. up to 0.02



Source: Author's calculations, Lucerne 2007–2021

- In line with prior studies (e.g., **Saez, 2009; Kleven & Schultz, 2014; Almunia & López-Rodríguez, 2019**)
- The ETI is higher for self-employed with a lower income than for self-employed with a higher income (**Bosch & de Boer, 2017**)

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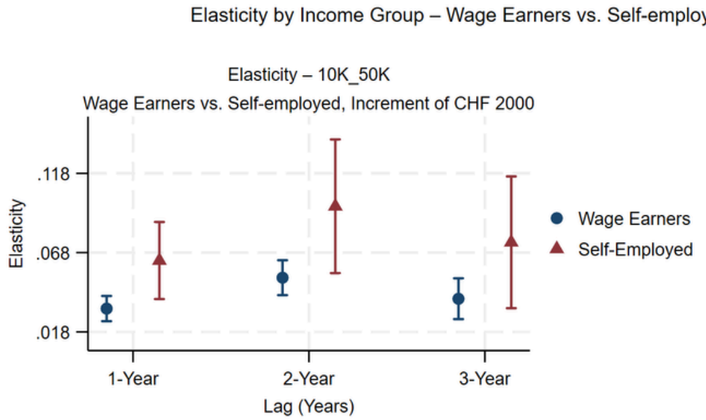
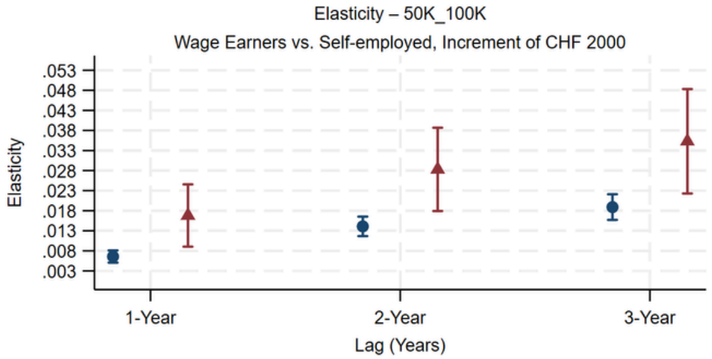
Results: Wage earners vs. self-employed

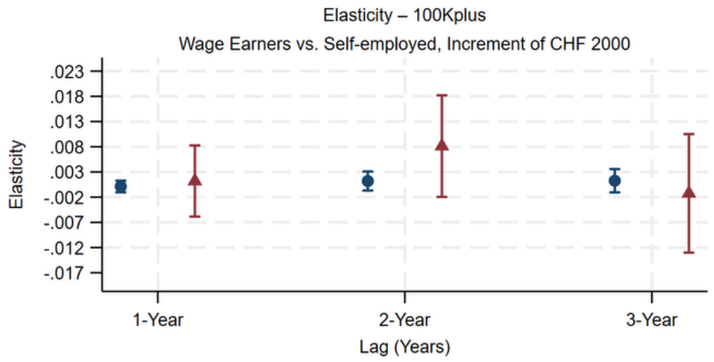
- **Self-employed individuals exhibit significantly higher elasticities** than wage earners at low and middle income levels — but the pattern reverses at the top of the income distribution.

up to 0.1 vs. up to 0.05





up to 0.04 vs. up to 0.02



- Wage earners: third-party income reporting and fixed contractual hours.
- Self-employed: more discretion in income reporting.

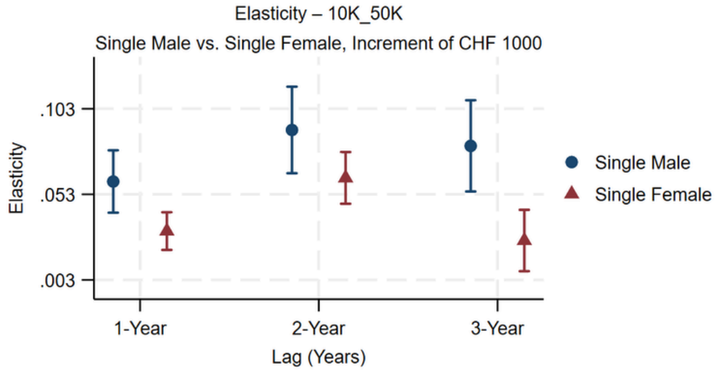
Source: Author's calculations, Lucerne 2007–2021

Results: Single male vs. single female

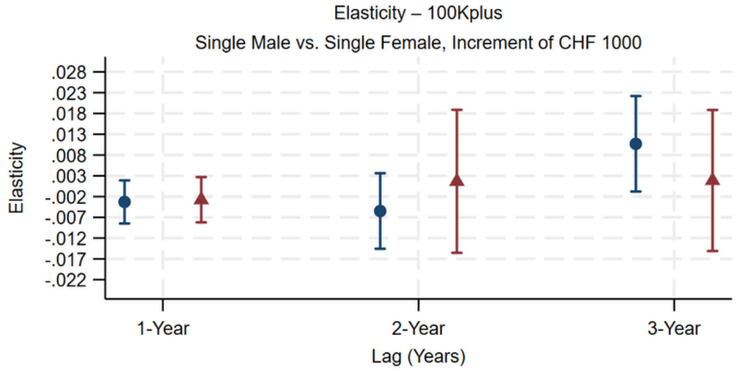
- **Single men exhibit significantly higher ETLI than single women** — particularly in the CHF 10K–50K income range.

Elasticity by Income Group – Single Male vs. Single Female, Increment of CHF 1000 Added to Base-Year Synthetic Income

up to 0.09 vs. up to 0.06



up to 0.01 vs. up to 0.005



- Consistent with **Jongen & Stoel (2019)** and **Blomquist & Selin (2010)**

Source: Author's calculations, Lucerne 2007–2021

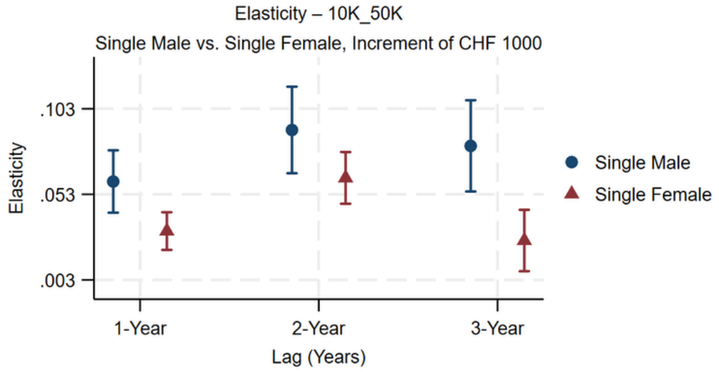
KATERYNA DASHEVSKA, HEC LAUSANNE

Results: Single male vs. single female

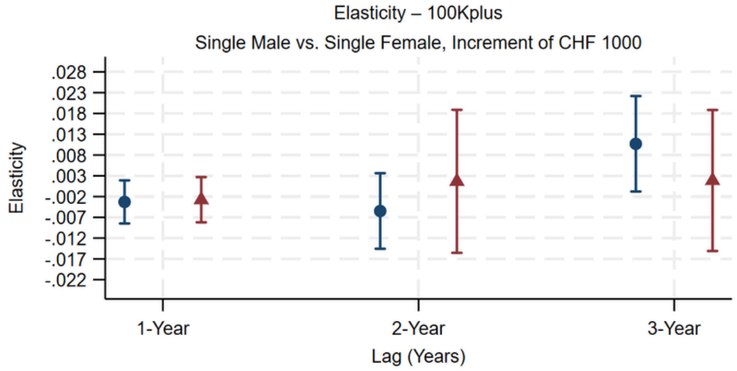
- **Single men exhibit significantly higher ETLI than single women** — particularly in the CHF 10K–50K income range.

Elasticity by Income Group – Single Male vs. Single Female, Increment of CHF 1000 Added to Base-Year Synthetic Income

up to 0.09 vs. up to 0.06



up to 0.01 vs. up to 0.005



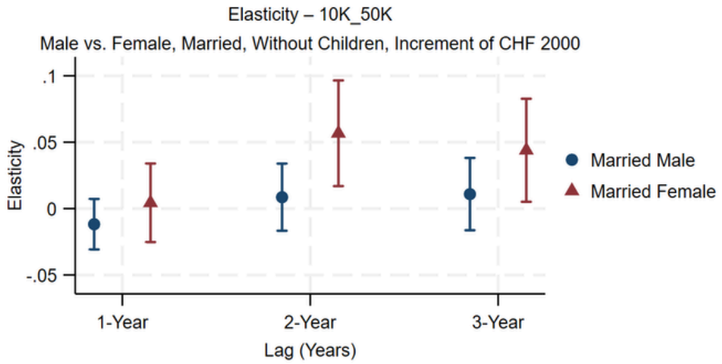
- **Muted ETLI among women:**
  - greater reliance on steady wage income,
  - lower exposure to performance-based pay,
  - occupational segregation, and
  - reduced bargaining power

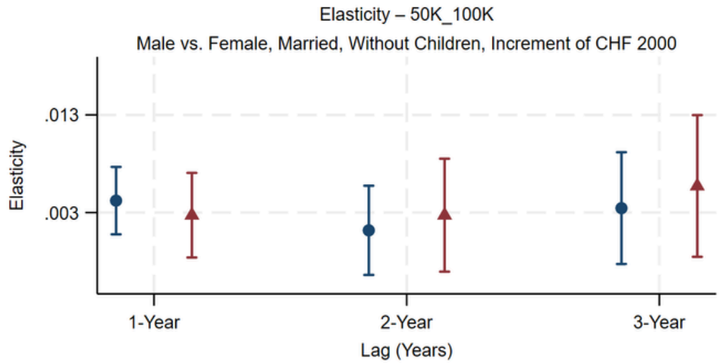
Source: Author's calculations, Lucerne 2007–2021

Results: Married male vs. married female without children

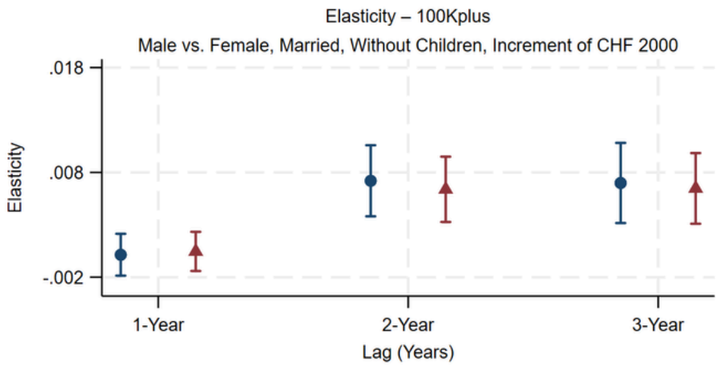
Elasticity by Income Group – Male vs. Female, Married, Without Children, Increment of CHF 2000 Added to Base-Year Synthetic Income

up to 0.06 vs. up to 0.01





up to 0.006 vs. up to 0.003



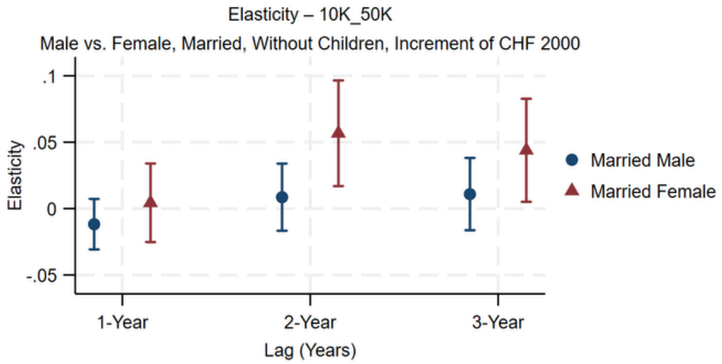
- Consistent with **Díaz-Caro & Onrubia (2018)**, and **Blomquist & Selin (2010)**

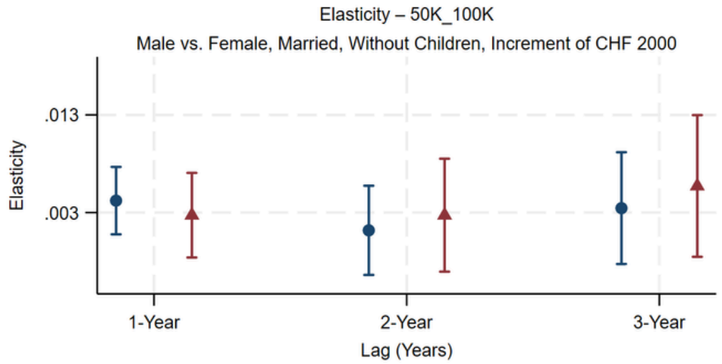
Source: Author's calculations, Lucerne 2007–2021

Results: Married male vs. married female without children

Elasticity by Income Group – Male vs. Female, Married, Without Children, Increment of CHF 2000 Added to Base-Year Synthetic Income

up to 0.06 vs. up to 0.01





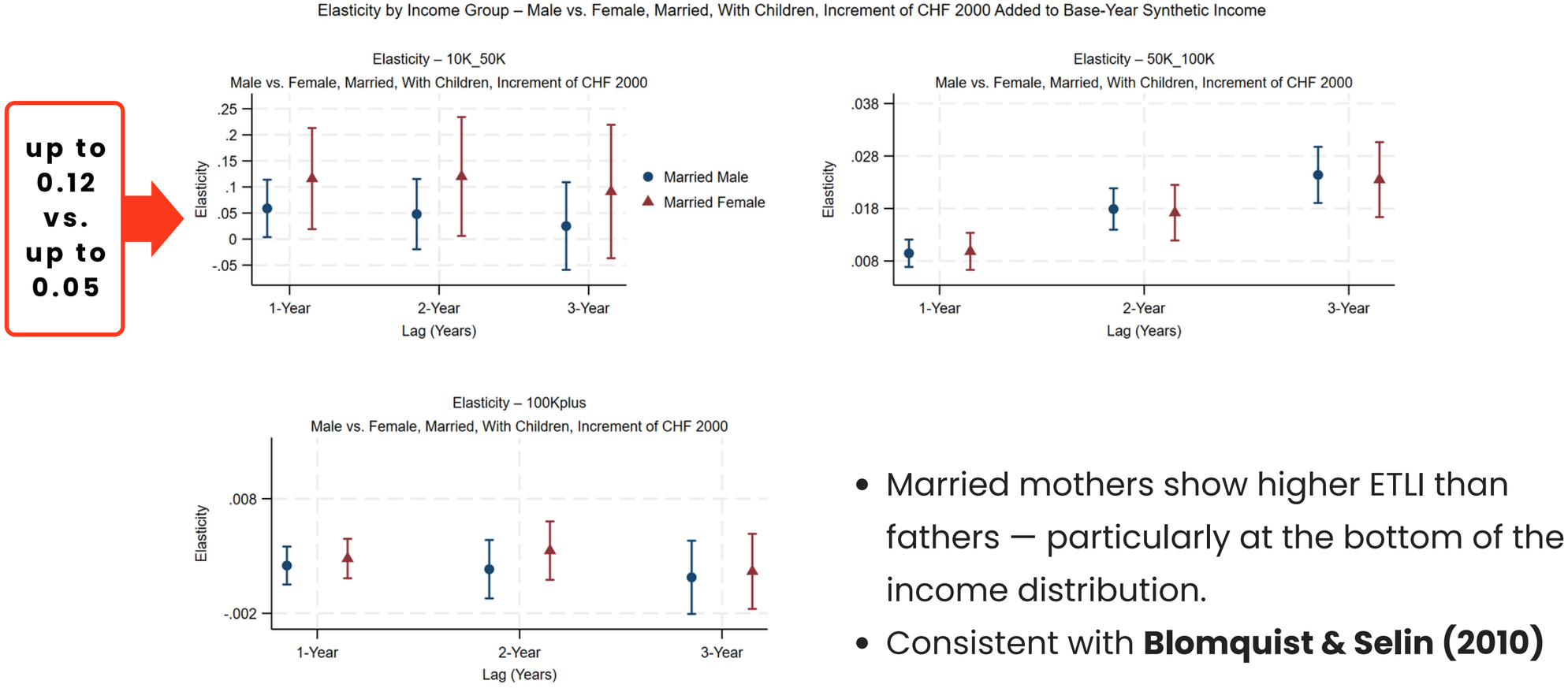
up to 0.006 vs. up to 0.003

- **Secondary earners exhibit higher tax responsiveness**, particularly when they are women.

Source: Author's calculations, Lucerne 2007–2021

Results: Married male vs. married female with children

up to 0.12 vs. up to 0.05

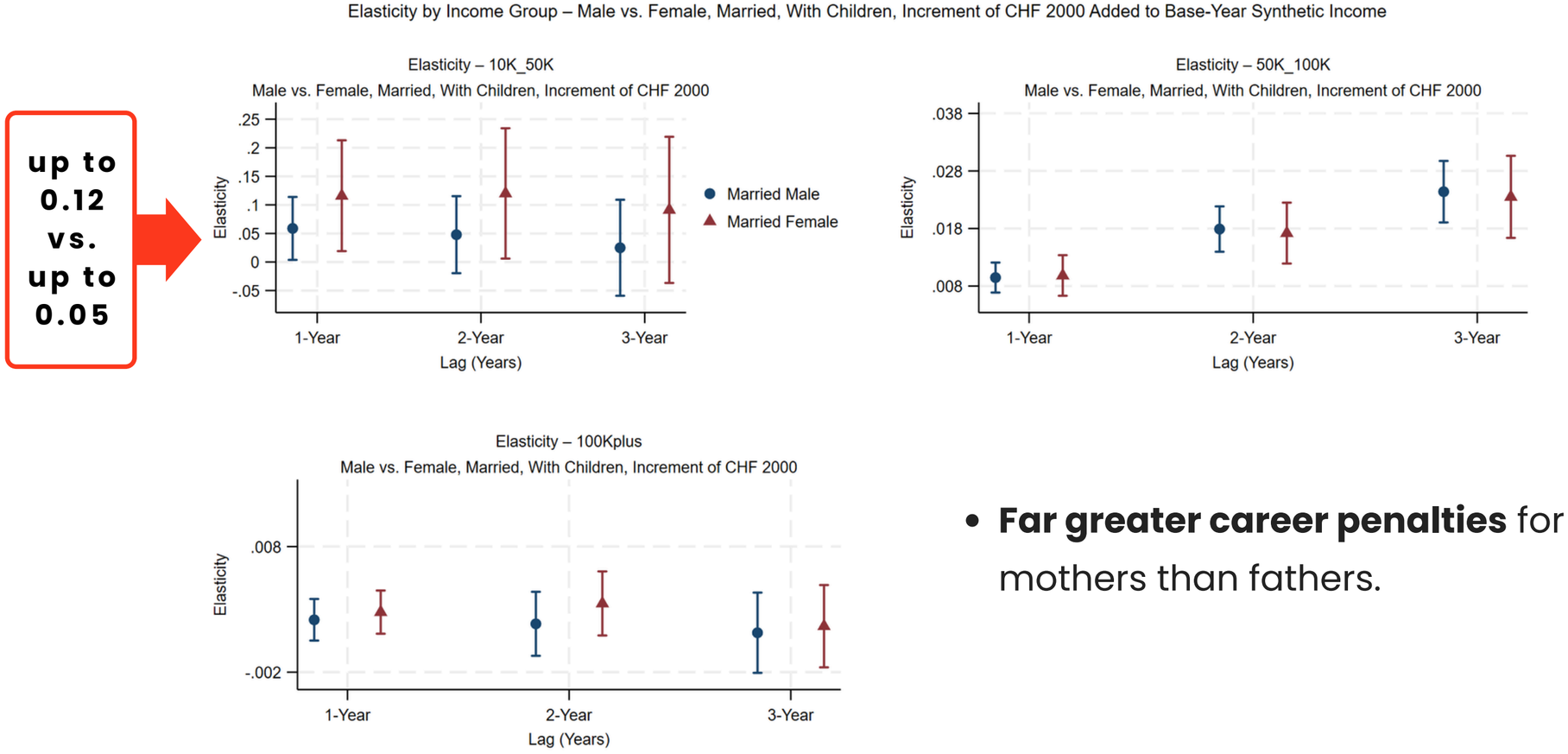


Source: Author's calculations, Lucerne 2007–2021

- Married mothers show higher ETLI than fathers — particularly at the bottom of the income distribution.
- Consistent with **Blomquist & Selin (2010)**

Results: Married male vs. married female with children

up to 0.12 vs. up to 0.05



- **Far greater career penalties** for mothers than fathers.

Source: Author's calculations, Lucerne 2007–2021

Literature context

Lower elasticities are common in strong enforcement settings

- **Denmark**:
  - Kleven et al. (2011): (pre-audit) **0.16,** (post-audit) **0.085**
  - Kleven & Schultz (2014): EBI **0.042–0.060**; ETI **0.064**; higher for self-employed
- **Norway**:
  - Aarbu & Thoresen (2001): ETIs between **-0.032 and 0.210** after the 1992 reform
  - Thoresen & Vattø (2015): ETI of **0.022–0.055** after the 2006 reform
- **Sweden:**
  - Holmlund & Söderström (2011): ETIs between **-0.134 and 0.289**
  - Blomquist & Selin (2010): Large female, moderate male responsiveness
- **Netherlands**:
  - Jongen & Stoel (2019): ETI of **0.10** (st); **0.24** (lt)
- **Obwalden, Switzerland:**
  - Martínez (2017): between **0.0174** and **0.246** (statistically insignificant)

My study's contribution to the literature:

- Adds Lucerne to the ETLI evidence base
- Disaggregated elasticity estimates: Provides rich heterogeneity analysis by gender, income group, marital status, and employment type.

Limitations

- **Simulated IVs reduce endogeneity but don’t fully eliminate it.**
  - Mean reversion and income volatility (e.g., during economic downturns, as the 2008–09 crisis or the COVID-19 pandemic) may bias estimates.
- **Joint estimation with income effects is unstable.**
  - The inclusion of $\Delta \ln(R)$ causes identification issues due to its near identity with gross income.
- **Representative tax profiles limit precision.**
  - Likely downward bias in gender-specific elasticities due to understated marginal tax rates.

Key Takeaways

- Wage earners (low income): ETLI up to 0.05.
- Self-employed (low income): ETLI up to 0.1.
- High-income earners: minimal responsiveness.
- Single men and secondary-earning women show higher ETLI.
- Trimming bottom tail (< CHF 10,000) changes ETLI slightly (+-).
- Differing lags, flexible spline controls and instrument increments confirm robustness.

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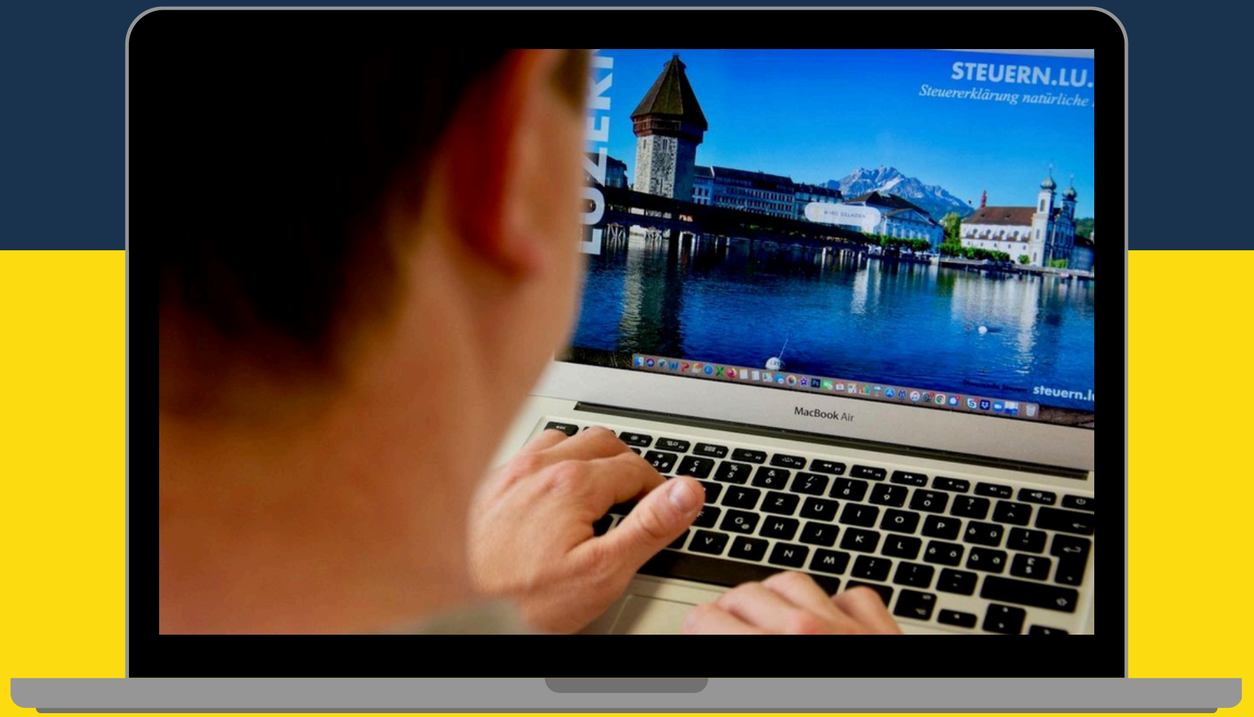
Thank you for your attention!



July 4, 2025

Naïve OLS

	1-year differences		2-year differences		3-year differences	
Income controls	None	Log income	None	Log income	None	Log income
	(1)	(2)	(3)	(4)	(5)	(6)
Elasticity, $\Delta ln(1-\tau)$	-0.00948***	-0.00813***	-0.0184***	-0.0124***	-0.0189***	-0.0105***
	(0.000325)	(0.000337)	(0.000570)	(0.000589)	(0.000699)	(0.000684)
Married (dummy)	0.0255***	0.323***	0.00979	0.478***	-0.00867	
	(0.00499)	(0.00863)	(0.00739)	(0.0169)	(0.0141)	
Log (income) control		-0.542***		-0.819***		-0.951***
		(0.00545)		(0.00570)		(0.00565)
Observations	806,768	664,148	799,631	544,866	649,039	438,328
R^2	0.174	0.345	0.281	0.508	0.377	0.600
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
Household FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Base-period married (dummy) is included as a control in all specifications. Due to the inclusion of individual fixed effects, its coefficient is absorbed and therefore not reported in column (6).

BACKUP SLIDE

Results: Trimming bottom tail

	CHF 1,000		CHF 2,000		CHF 5,000	
	GLI > 0	GLI > CHF 10K	GLI > 0	GLI > CHF 10K	GLI > 0	GLI > CHF 10K
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 1-year differences						
A1: No income controls						
$\Delta ln(1-\tau)$	0.00207**	0.00545***	0.00203***	0.00590***	0.00195***	0.00505***
	(0.000847)	(0.000668)	(0.000775)	(0.000617)	(0.000660)	(0.000531)
N. Obs	673,157	653,892	678,012	658,737	682,214	662,940
Shea's partial R^2	0.3298	0.3294	0.3307	0.3300	0.4440	0.4433
First stage F-statistic	385.816	591.158	520.181	826.502	1002.35	1330.38
A2: Log (income) control						
$\Delta ln(1-\tau)$	0.00468***	0.00627***	-0.0000861	0.00213***	-0.000676	0.000860
	(0.000861)	(0.000668)	(0.000782)	(0.000615)	(0.000667)	(0.000529)
N. Obs	673,157	653,892	678,012	658,737	682,214	662,940
Shea's partial R^2	0.3299	0.3298	0.3307	0.3301	0.4441	0.4434
First stage F-statistic	540.568	611.881	359.115	363.515	619.204	491.118
A3: 5-piece spline control						
$\Delta ln(1-\tau)$	-0.00189**	-0.000732	-0.000367	0.000510	-0.000540	0.000835
	(0.000848)	(0.000671)	(0.000774)	(0.000618)	(0.000660)	(0.000534)
N. Obs	673,157	653,892	678,012	658,737	682,214	662,940
Shea's partial R^2	0.3314	0.3311	0.3309	0.3303	0.4443	0.4436
First stage F-statistic	196.401	143.702	360.733	269.588	671.571	526.873
A4: 10-piece spline control						
$\Delta ln(1-\tau)$	-0.00104	0.000534	0.000254	0.00126**	-0.000171	0.00115**
	(0.000844)	(0.000660)	(0.000770)	(0.000609)	(0.000658)	(0.000526)
N. Obs	673,157	653,892	678,012	658,737	682,214	662,940
Shea's partial R^2	0.3317	0.3314	0.3327	0.3321	0.4453	0.4446
First stage F-statistic	234.519	213.197	405.467	333.321	718.399	586.689

BACKUP SLIDE

Results: Income effect control

Table 5: 2SLS estimates for basic model with income effect control (increment of CHF 1,000)

	1-year differences				2-year differences				3-year differences			
Income controls	None	Log income	Log income 5-piece spline	Log income 10-piece spline	None	Log income	Log income 5-piece spline	Log income 10-piece spline	None	Log income	Log income 5-piece spline	Log income 10-piece spline
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta ln(1-\tau)$	0.000320***	0.000470***	0.000133	0.0000880	0.000636***	0.000861***	0.000523***	0.000422***	0.000469***	0.000819***	0.000715***	0.000627***
	(0.0000543)	(0.0000656)	(0.0000836)	(0.0000760)	(0.0000813)	(0.0000934)	(0.000149)	(0.000138)	(0.000097)	(0.000118)	(0.000200)	(0.000189)
$\Delta ln(R)$	1.017***	0.996***	0.967***	0.978***	1.021***	1.007***	0.957***	0.967***	1.023***	1.006***	0.951***	0.959***
	(0.000814)	(0.000632)	(0.00297)	(0.00256)	(0.000836)	(0.000975)	(0.00552)	(0.00552)	(0.000929)	(0.00131)	(0.00560)	(0.00580)
Married (dummy)	-0.000230***	0.00226***	0.00104***	0.000919***	0.000931***	0.00304***	0.00287***	0.00259***	0.00203***	0.00490***	0.00586***	0.00549***
	(0.0000449)	(0.0000636)	(0.0000947)	(0.0000844)	(0.0000619)	(0.0000929)	(0.000184)	(0.000181)	(0.0000759)	(0.000132)	(0.000273)	(0.000276)
Log (income) control		-0.00400***				-0.00363***				-0.00511***		
		(0.0000779)				(0.000153)				(0.000238)		
1st spline control			-0.0115***	-0.00747***			-0.0201***	-0.0159***			-0.0250***	-0.0213***
			(0.000477)	(0.000548)			(0.00129)	(0.00154)			(0.00149)	(0.00180)
2nd spline control			0.00266***	-0.0232***			0.00337***	-0.0303***			0.00304***	-0.0331***
			(0.000691)	(0.000718)			(0.000995)	(0.00105)			(0.00104)	(0.00142)
3rd spline control			0.0000764	0.0131***			-0.00422***	0.0141***			-0.0132***	0.00986***
			(0.000519)	(0.00119)			(0.000914)	(0.00181)			(0.00125)	(0.00240)
4th spline control			0.00318***	0.00166			0.00416***	-0.00162			0.00510***	-0.00295
			(0.000526)	(0.00134)			(0.000782)	(0.00200)			(0.00103)	(0.00258)
5th spline control			-0.00395***	0.00269**			0.000356	0.00706***			-0.00389***	0.00937***
			(0.000493)	(0.00124)			(0.000885)	(0.00199)			(0.00114)	(0.00270)
6th spline control				0.00642***				-0.00485**				-0.0284***
				(0.00122)				(0.00201)				(0.00278)
7th spline control				-0.0214***				-0.0180***				-0.00642**
				(0.00121)				(0.00201)				(0.00283)
8th spline control				0.0155***				0.0156***				0.0106***
				(0.00105)				(0.00177)				(0.00247)
9th spline control				0.00479***				0.0113***				0.0101***
				(0.000873)				(0.00135)				(0.00186)
10th spline control				-0.00617***				-0.00217*				-0.00684***
				(0.000659)				(0.00116)				(0.00149)
Observations	673,157	673,157	673,157	673,157	552,971	552,971	552,971	552,971	445,730	445,730	445,730	445,730

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates from 2SLS regressions. GLI is above zero. All regressions include married (dummy), household- and year-fixed effects for each base year.

BACKUP SLIDE