Wealth Tax Enforcement: The Role of Tax and Institutional Design

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Disclaimer: *The views expressed in this paper do not necessarily reflect those of the ATC and its Management.*

Motivation

- Wealth taxes have received significant attention in the public debate
- But wealth a difficult tax base to handle in practice
  - ... determining the net worth to tax is challenging (Scheuer and Slemrod, 2021)
  - ... complex methods of wealth tax evasion (Saez and Zucman, 2019)
    - ... requires comprehensive reporting of information and technological innovations for prepopulated returns (Saez and Zucman, 2022)
- ... and Tax Design matters:
  - ... loopholes contribute to avoidance (Alvaredo and Saez, 2009; Durán-Cabré and Esteller-Moré, 2021; Bach et al., 2024)
  - ... slacker reporting requirements may favour evasion (Garbinti et al., 2024)
- As with any tax base (and maybe more with WT), enforcement is crucial (Saez and Zucman, 2019) ... BUT its effectiveness uncertain
  - ➲ ... and Institutional Design may affect it More here

Motivation cont.ed

- What impact can we expect from audits (in general)?
  1. Verification
  2. Compliance (direct)
  3. Indirect compliance
- The Direct Compliance is ambiguous
- Compliance might increase, as audited taxpayers (especially noncompliant) might update their perceived probability of being audited again upwards
- Compliance might reduce, as audited taxpayers might think that 'lightning does not strike twice'

Motivation cont.ed

Recent interest among academics and policymakers has led to important work (on income taxes and VAT):

- **PIT:** e.g. Kleven et al. (2011); Advani et al. (2021); DeBacker et al. (2018); Beer et al. (2020);
- **CIT:** e.g. DeBacker et al. (2015); Kotsogiannis et al. (2024);
- **VAT:** e.g. Kotsogiannis et al. (2025); Henning et al. (2023); Waseem (2021);
- ... But **lack of evidence for Wealth Tax (WT)**
- **... and the role of Tax and Institutional Design remains unexplored**

Our study in a nutshell

- **Our research questions:**
  1. Are tax audits deterring noncompliance on WT?
  2. Does the design of WT influence audited taxpayers behaviour?
     - What is the impact of capping WT liability?
  3. Does the institutional design of WT enforcement play a role?
     - What is the impact of the "vertical" arrangement of auditing responsibilities on effectiveness?
- **We focus on Spain and combine 2 sources of data:**
  - Universe of Catalan WT anonymised tax declarations (2011-2020)
  - Universe of audit data for the same period (anonymised)
- **Our approach: matched-DID**
  1. Stacked Event Study Design (Cengiz et al., 2019)
  2. CEM (Iacus et al., 2011)
  3. CSDID (Callaway and Sant'Anna, 2021) as robustness

Our study in a nutshell

Our results:

- WT audits in Catalonia deliver pro-deterrence effects on compliance
  - WT net liability declared by audited taxpayers over the next three years after the audit increases by **13%, 26%, 38%** respectively
  - In years 4 and 5, the tax base increases, but the net liability decreases

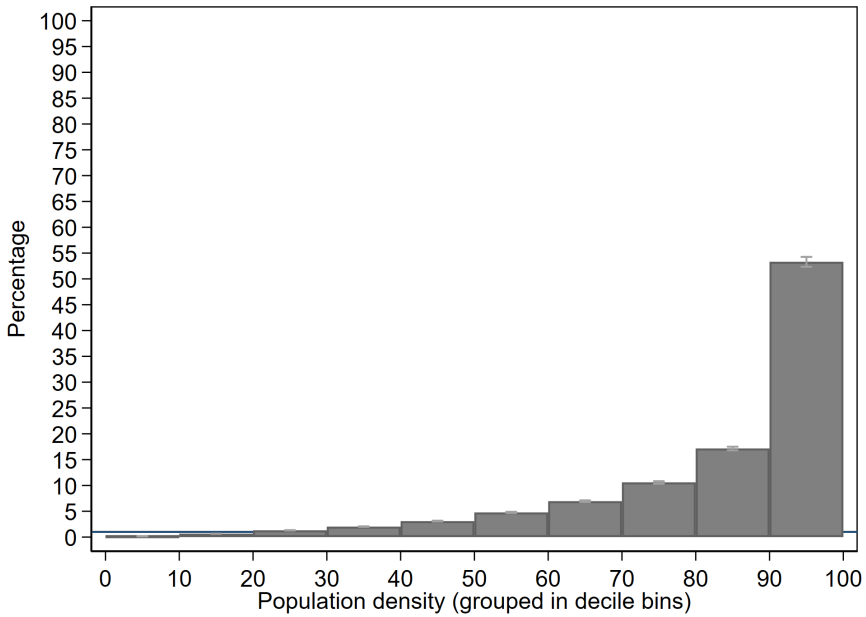
. . . **Why?**

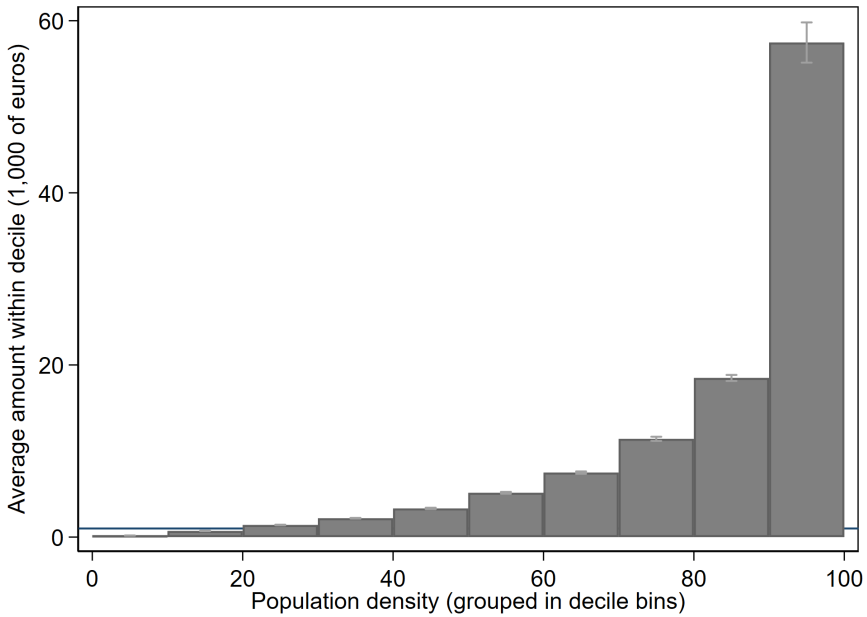
- Different Design choices act limiting overall audit effectiveness:
  - **WT Design**: Ceiling on tax liability exploited by taxpayers to substitute evasion with avoidance strategies
  - **Institutional Design**:
    - ATC audits tend to drive the pro-deterrence impact
    - AEAT audits have a negligible impact on compliance

Outline

- Institutional setting and data
- Empirical approach and identification strategy
- Main results
- Conclusions

Institutional setting: the WT in Spain





WT liability

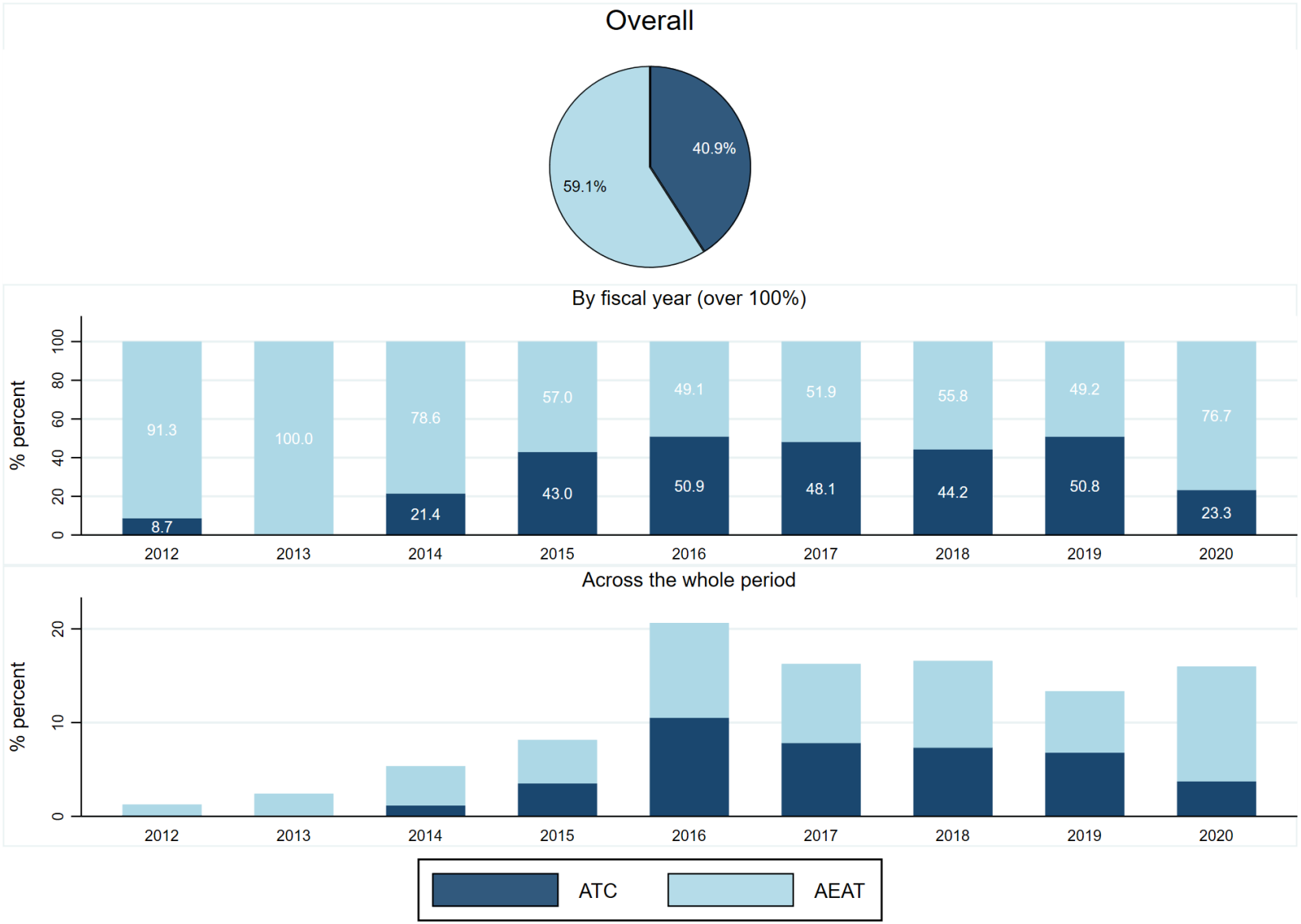
- WT is (decentralized and) levied annually on all forms of wealth BUT with exemptions and with a minimum threshold
- The (gross) tax liability is obtained by applying progressive tax rates to the net tax base, i.e. taxable wealth minus the minimum threshold.
- Wealth tax rates (Central government) 0.2 - 3.5%.
- Ceiling on (net) wealth tax liability when income is relatively low compared to taxable wealth

More on WT data here

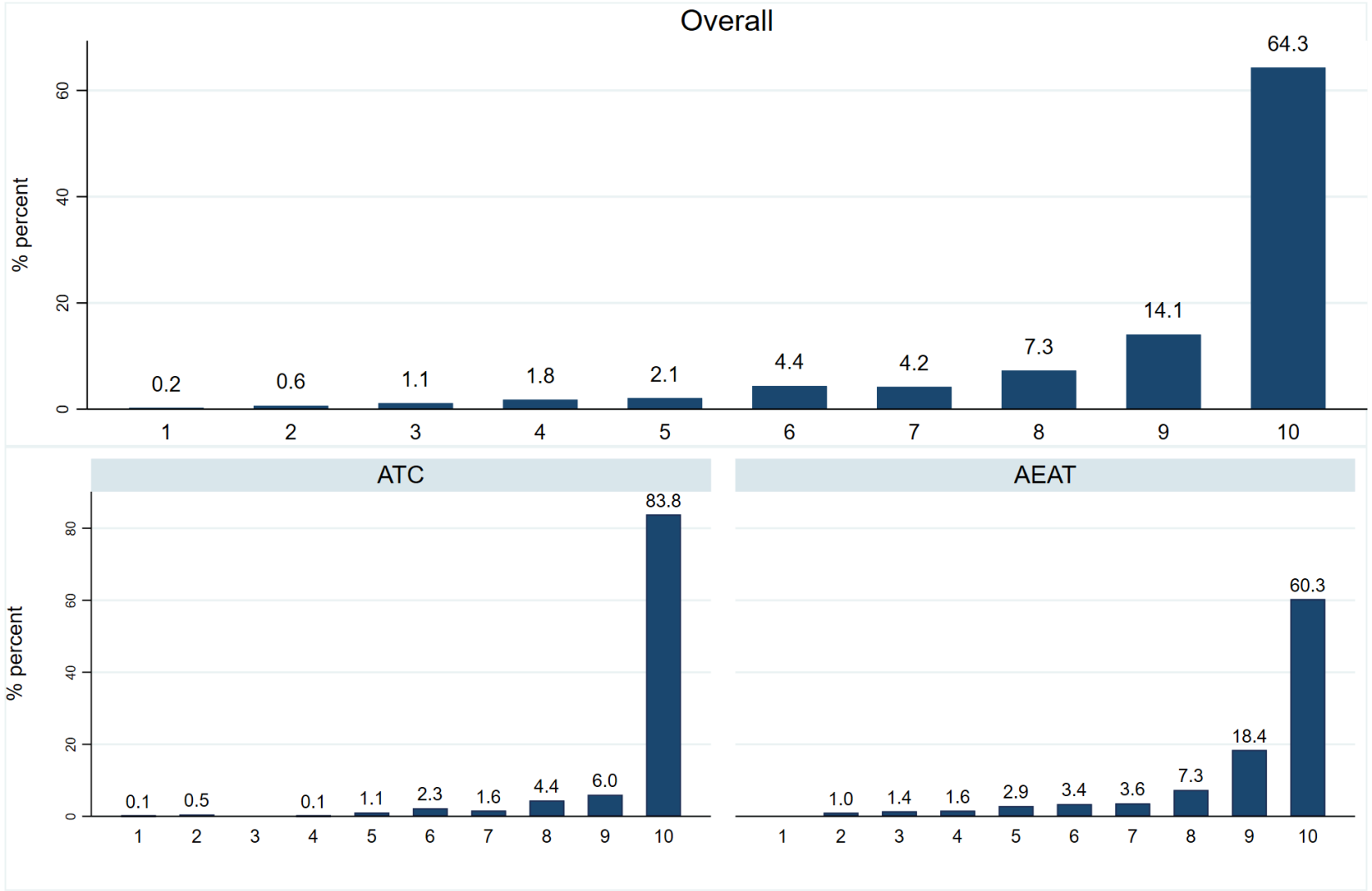
Institutional setting: the WT in Spain

- Regional governments also play an important role in the tax and progressively obtained more normative power.
- Durán-Cabré et al. (2019b) estimate a 'tax gap' for the WT of 44.34% in Catalonia
  - ... mainly due to undeclared assets located abroad (56.40%), and incorrect application of the business exemptions (36.08%)
- Auditing is a responsibility shared by AEAT and regional agencies (like ATC) but the AEAT can audit the WT return only when the procedure has implications in the personal income tax More here
  - ... this (institutional) restriction may affect compliance
  - since the national agency has access to more information about taxpayers than regional administrations . . . BUT may not fully exploit it (e.g. lack of incentives, targeting focused on PIT)

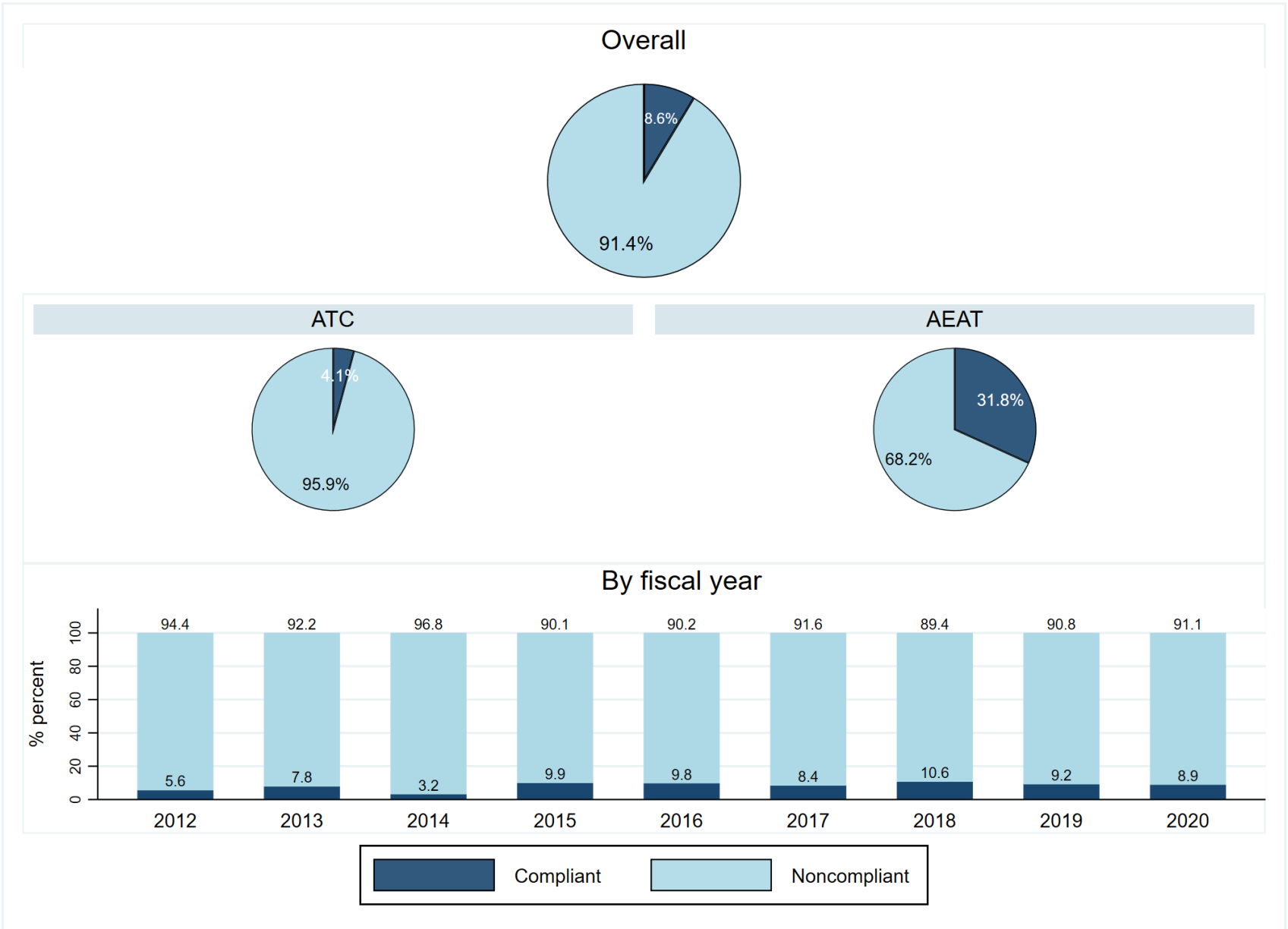
Data: Audits – distribution by origin



Data: Audits – distribution by wealth deciles and origin



Data: Audits – distribution by audit outcome



Data: Audits' detection capacity

Table 1: Descriptive statistics (audit detection)

	Obs	Measurement Unit	Mean	SD	Min	Max
ATC						
Self-Assessment	725	Euros	23,954.96	66,981.96	0.00	943,733.25
Underreporting	725	Euros	37,460.04	60,606.04	0.00	940,037.19
Total Amount (%)	725	% Potential tax liability	68.81	30.69	0.00	100
AEAT						
Self-Assessment	1,075	Euros	35,180.09	63,472.64	0.00	653,805.75
Underreporting	1,075	Euros	36,391.93	120,951.47	0.00	1,657,435.88
Total Amount (%)	1,075	% Potential tax liability	35.67	36.44	0.00	100
Total						
Self-Assessment	1,800	Euros	30,658.86	65,123.77	0.00	943,733.25
Underreporting	1,800	Euros	36,822.14	101,055.12	0.00	1,657,435.88
Total Amount (%)	1,800	% Potential tax liability	49.02	37.90	0.00	100

Note: Authors' calculations based on data provided by ATC.

Empirical Strategy: matched-DID

- Potential differential attrition $\rightarrow$ perfectly balanced panel of 31,542 taxpayers and 1,800 audits
- Risk-based audits $\rightarrow$ we combine matching with DID
- Formally, we use CEM-matched Stacked Event Study Design (and CSDID as robustness)
  - ... stacks are created based on the audit waves
  - ... they are appended together
  - ... we estimate an event study regression (first audit) with taxpayer-by-stack fixed effects, time-by-stack fixed effects, S.E. clustering on taxpayer-by-stack, and weights from the CEM stratification.

$$Y_{ist} = \sum_{\substack{k=-4 \\ k \neq -1}}^{5} \beta_k AUDIT_i \times 1\{t_s = k\} + \theta_{is} + \tau_{ts} + \varepsilon_{ist},$$

Empirical Strategy: covariates balance

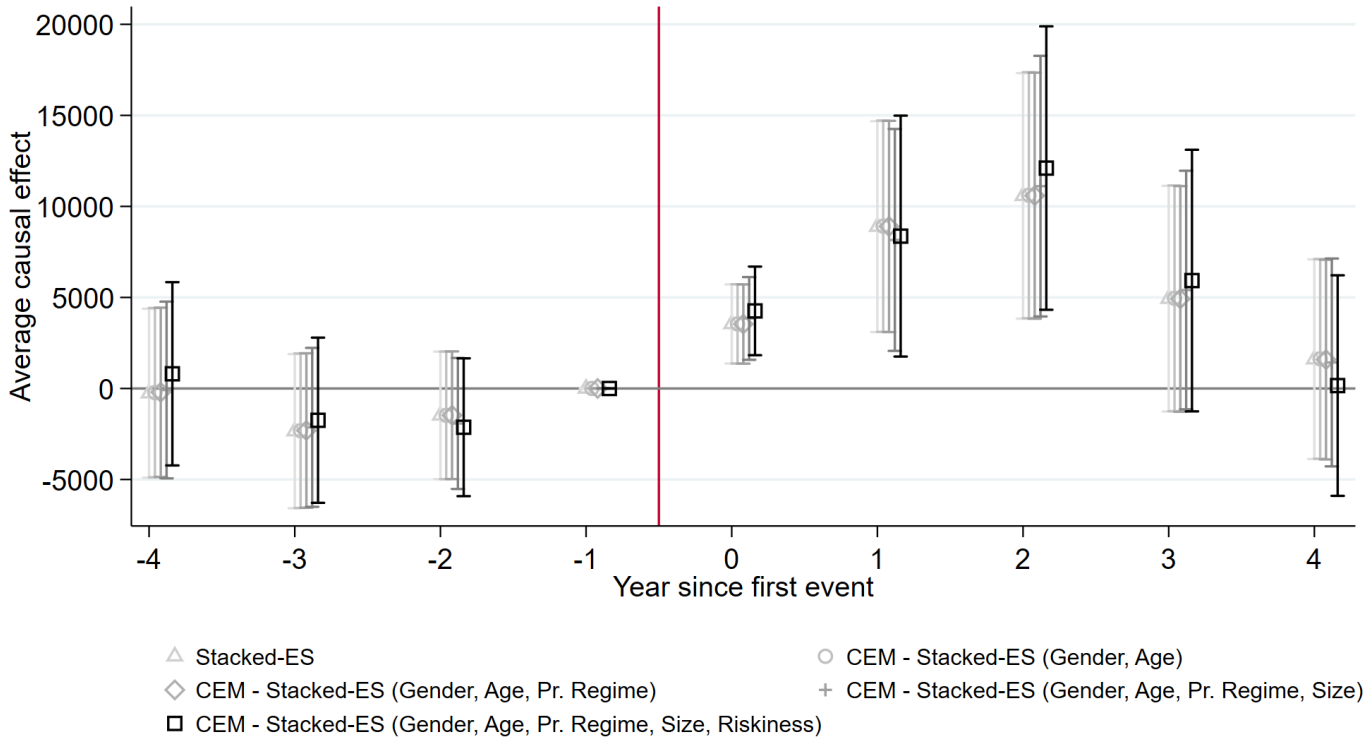
Table 2: Imbalance pre and post CEM matching – whole set of covariates

Panel A: Overall imbalance, Multivariate L_1	
L_1 statistic pre CEM:	0.91
L_1 statistic post CEM:	0.52

Panel B: Univariate imbalance		
	L_1 pre CEM	L_1 post CEM
Risk 1 (non-taxable to taxable items ratio)	0.22	0.10
Risk 2 (tax credits to the tax liability ratio)	0.19	0.04
Decile of taxable wealth items	0.33	3.62e-15
Decile of non-taxable wealth items	0.48	3.86e-15
Gender	0.11	2.19e-15
Age Brackets	0.16	4.05e-15
Matrimonial proprietary regime	0.07	3.01e-15

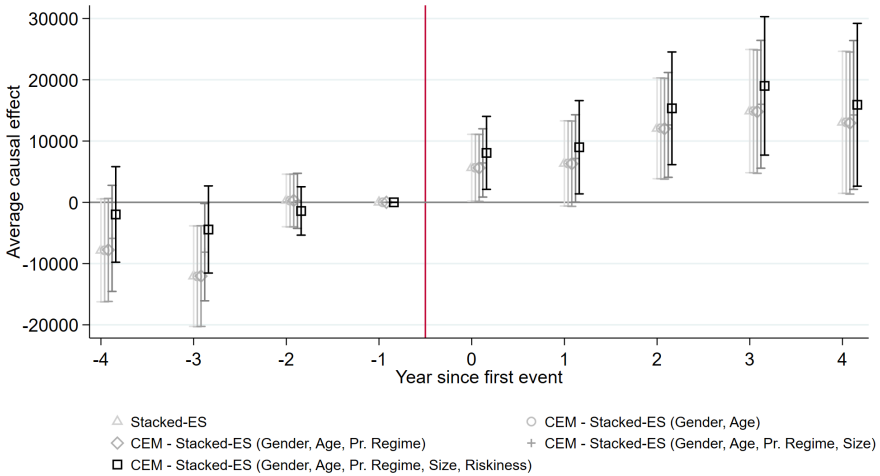
Note: The table depicts L_1 statistics for multivariate and univariate imbalance, as defined in Iacus et al. (2011).

Results: Aggregate impact on net WT liability

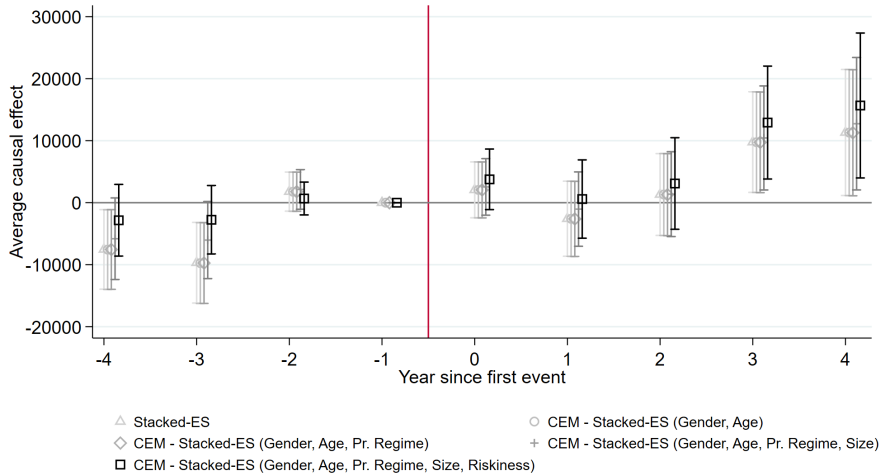


Note: Note: This figure reports the estimates of the period-specific treatment effects of tax audits on net Wealth Tax liabilities reported in levels. Estimates are obtained through CEM-Weighted Stacked Event Study models (and different sets of matching covariates). Taxpayer-by-stack and time-by-stack fixed effects are controlled for. The excluded category is the last period before treatment (T=-1); 95 percent confidence intervals are shown and based on S.E. clustered at taxpayer-by-stack level.

Results: Components of the aggregate net impact



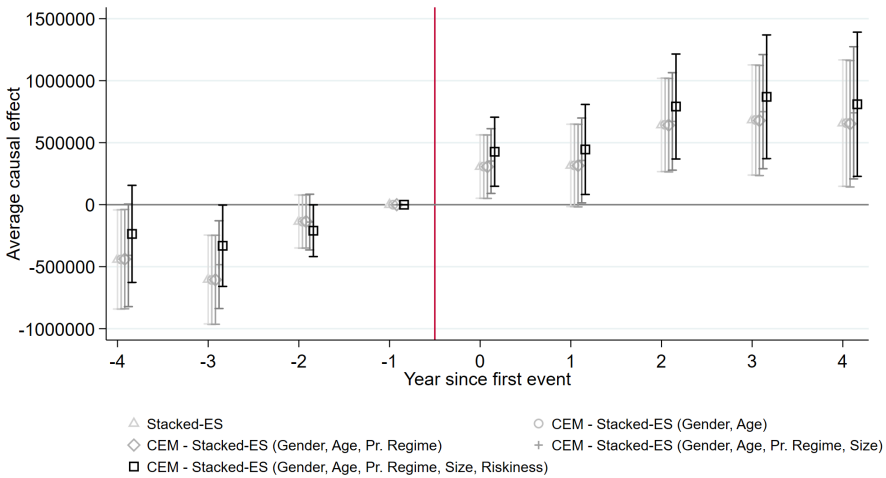
Tax Payable (Gross Tax Liability)



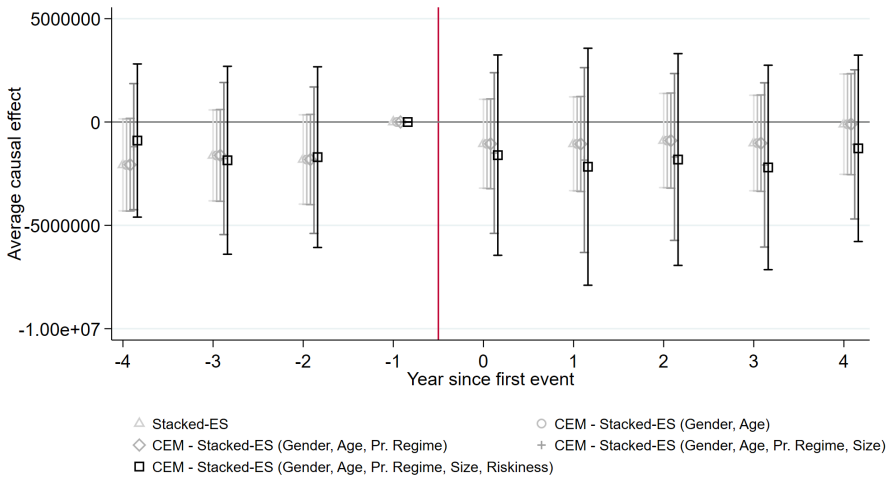
Tax Credits (Limit on WT liability)

Note: Note: This figure reports the estimates of the period-specific treatment effects of tax audits on different margins of outcome reported in levels. Estimates are obtained through CEM-Weighted Stacked Event Study models (and different sets of matching covariates). Taxpayer-by-stack and time-by-stack fixed effects are controlled for. The excluded category is the last period before treatment (T=-1); 95 percent confidence intervals are shown and based on S.E. clustered at taxpayer-by-stack level.

Results: Components of the aggregate net impact



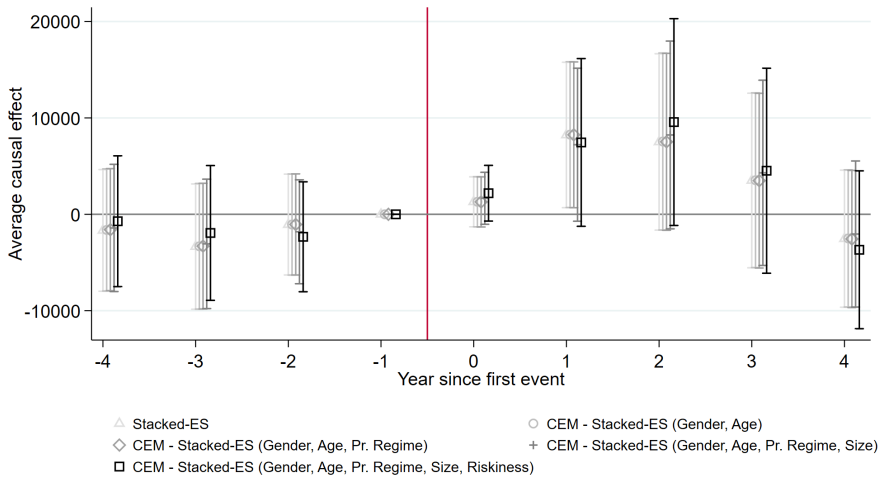
Taxable items



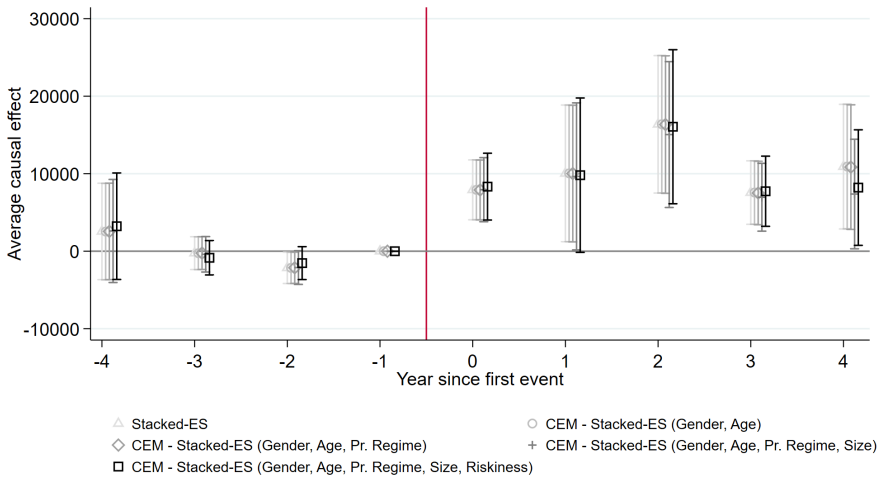
Non-taxable items

Note: This figure reports the estimates of the period-specific treatment effects of tax audits on different margins of outcome reported in levels. Estimates are obtained through CEM-Weighted Stacked Event Study models (and different sets of matching covariates). Taxpayer-by-stack and time-by-stack fixed effects are controlled for. The excluded category is the last period before treatment (T=-1); 95 percent confidence intervals are shown and based on S.E. clustered at taxpayer-by-stack level.

Results: AEAT vs. ATC (WT liability)



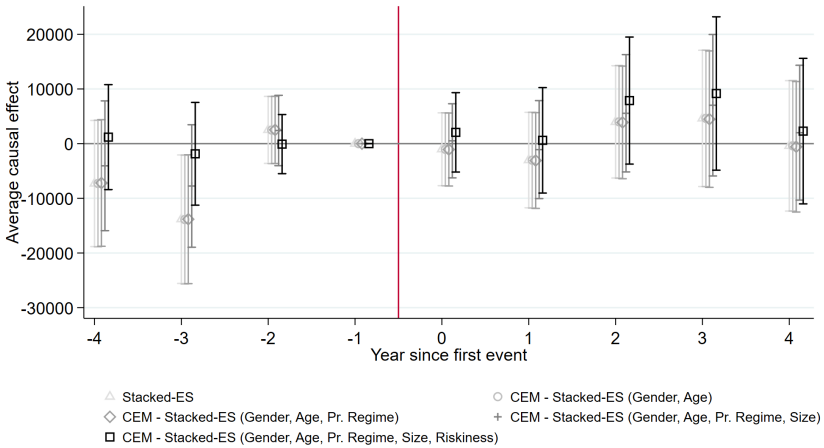
AEAT



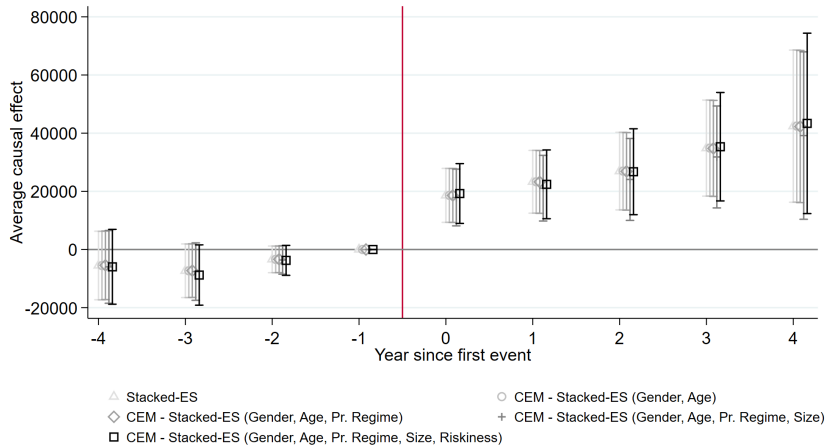
ATC

Note: This figure reports the estimates of the period-specific treatment effects of tax audits on net Wealth Tax liabilities reported in levels. Estimates are obtained through CEM-Weighted Stacked Event Study models (and different sets of matching covariates). Taxpayer-by-stack and time-by-stack fixed effects are controlled for. The excluded category is the last period before treatment (T=-1); 95 percent confidence intervals are shown and based on S.E. clustered at taxpayer-by-stack level.

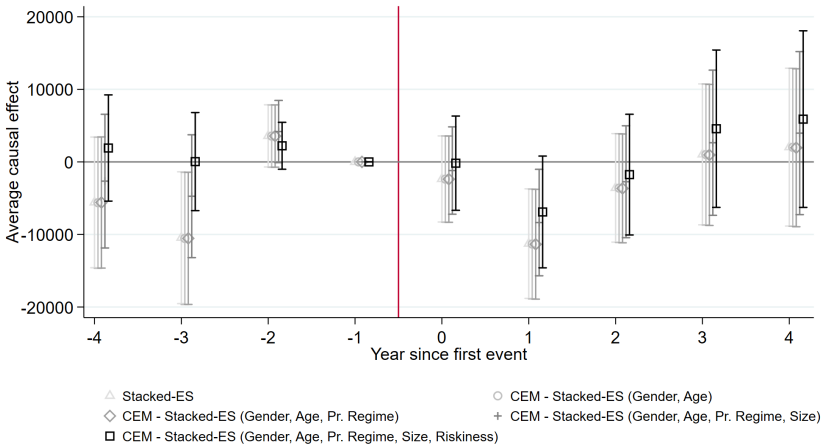
Results: AEAT vs. ATC (Tax payable & Tax credits)



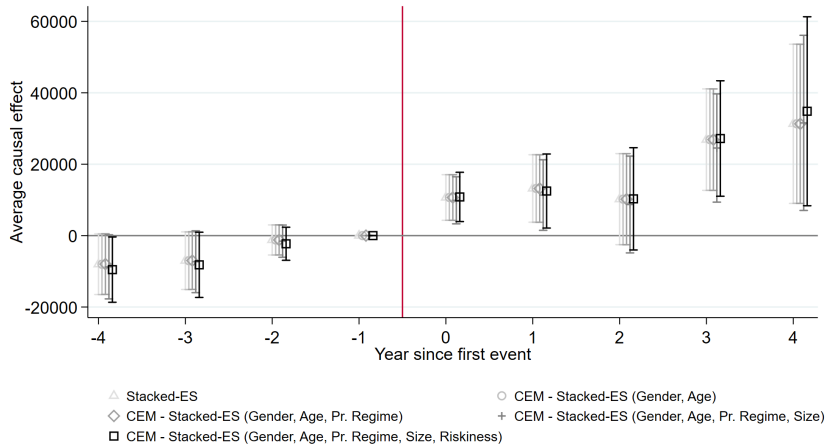
AEAT - Tax payable



ATC - Tax payable

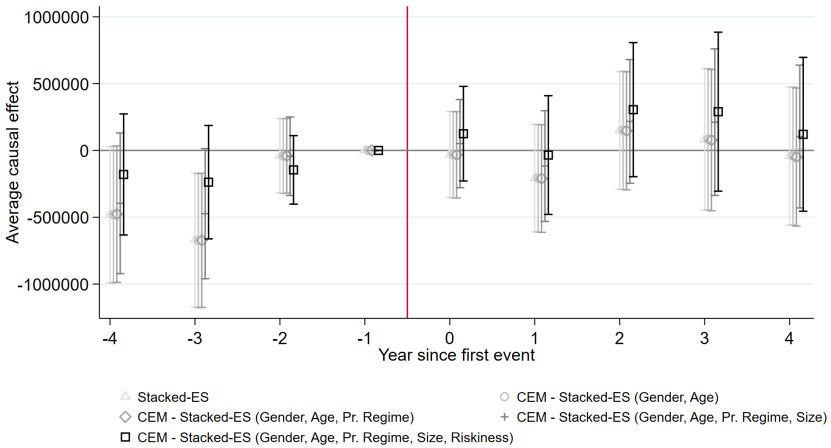


AEAT - Tax credits

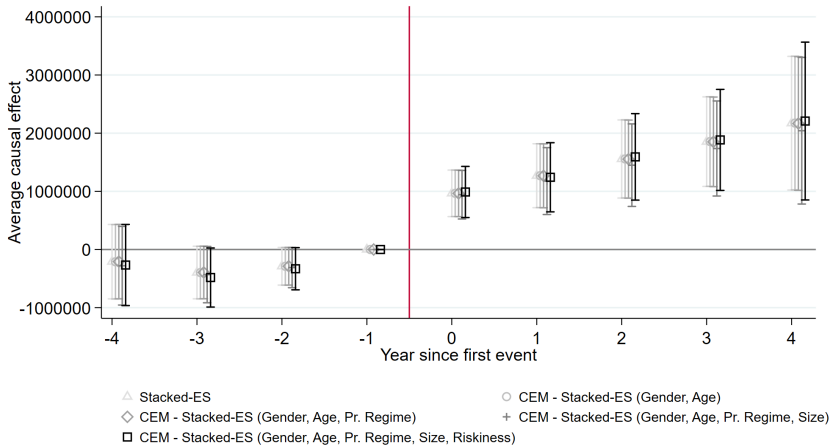


ATC - Tax credits

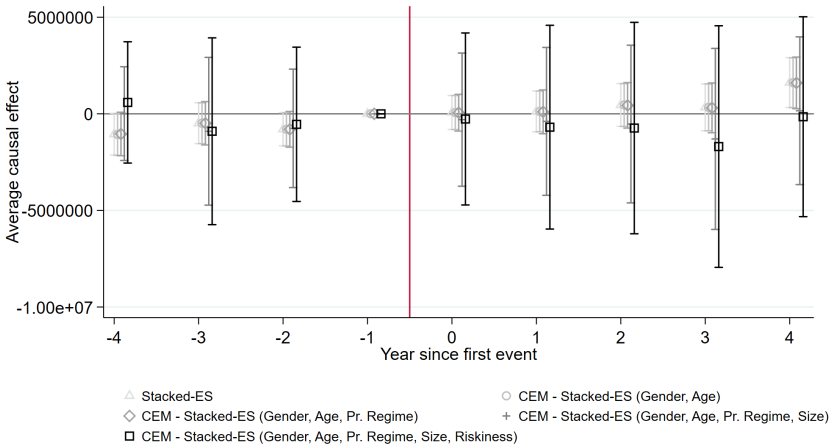
Results: AEAT vs. ATC (Taxable/exempt items)



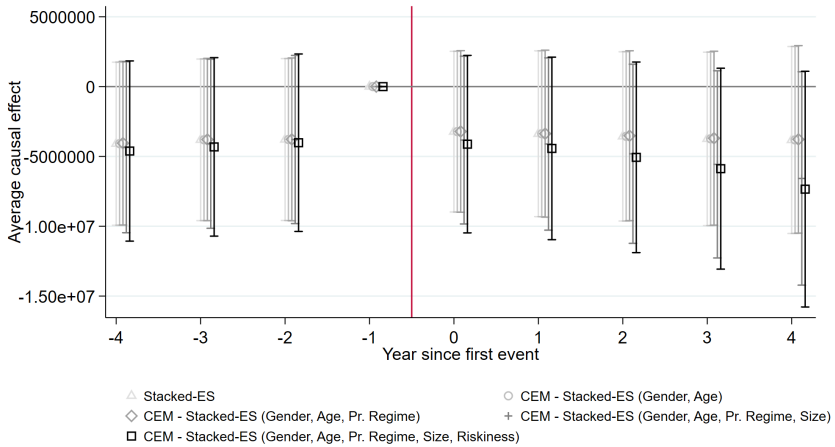
AEAT - Taxable items



ATC - Taxable items



AEAT - Non-taxable items



ATC - Non-taxable items

Conclusions

- **WT audits** in Catalonia **deliver pro-deterrence** effects on compliance
  - WT net liability declared by audited taxpayers over the next three years after the audit increases by **13%, 26%, 38%** respectively
  - In years 4 and 5, the tax base increases, but the net liability decreases

. . . **BUT** with **limitations** due to **(inefficient) Design choices**:

- **Loopholes**: Taxpayers **substitute evasion with avoidance** strategies (ceiling on tax liability as in Durán-Cabré et al., 2019a)
- **Institutional design** also play a role
  - ATC audits tend to drive the pro-deterrence impact
  - AEAT audits have a negligible impact on compliance . . . **why?**
    - **lack of coordination** between tax administrations
    - **weak incentives** for AEAT to design its audit process to maximize WT revenues (e.g. selection criteria not involving WT, low intensity)

Robustness and Heterogeneities

- Robustness analysis with Callaway and Sant'Anna (2021) corroborates these results CLICK HERE
- Additional analysis on taxpayers' heterogeneities by:
  - . . . compliance status
  - . . . wealth deciles
  - . . . age
  - . . . gender

CLICK HERE

Thank you!

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@KotsogiannisC
@LVSalvadori

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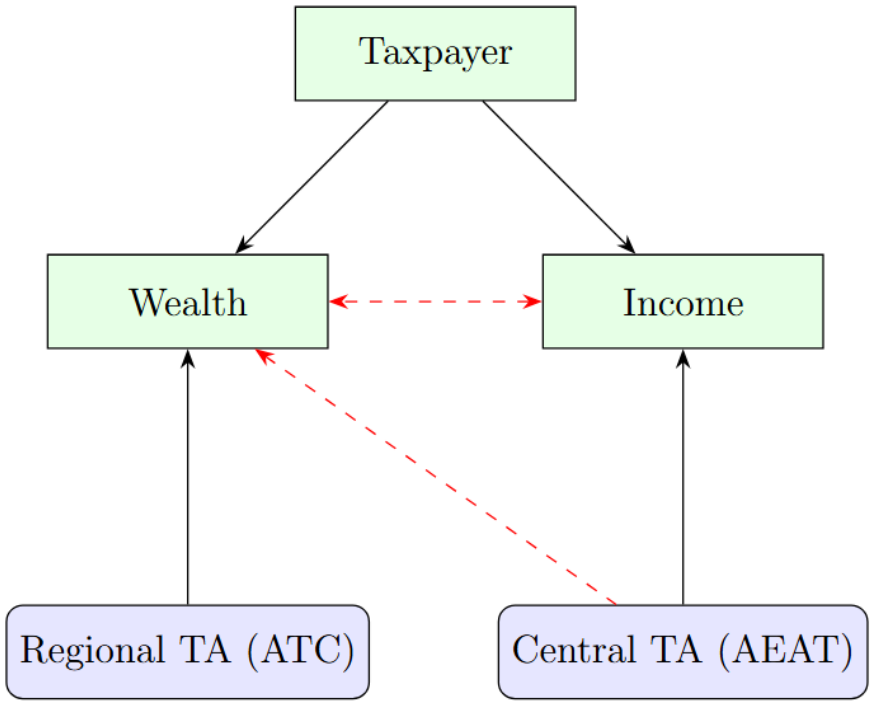
Institutional setting: the WT in Spain

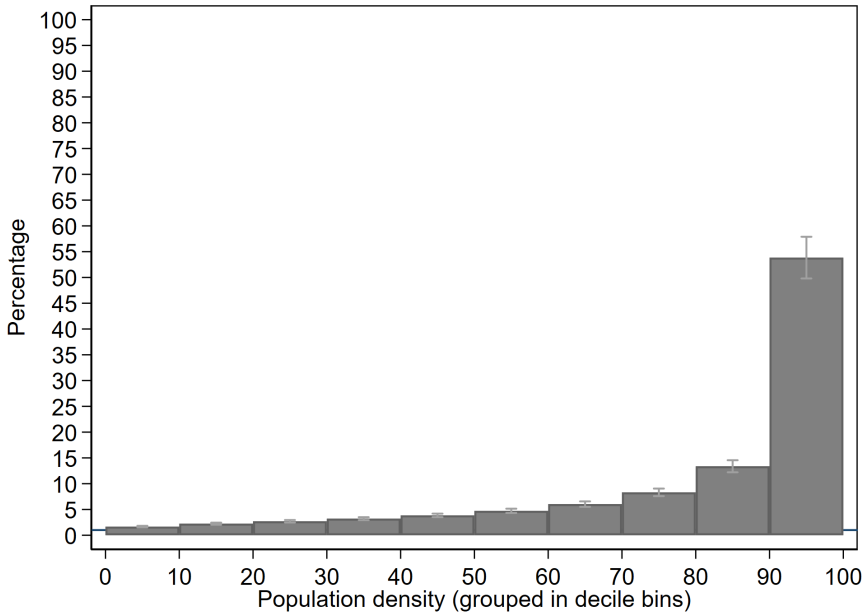
WT audit function: institutional arrangement in Spain



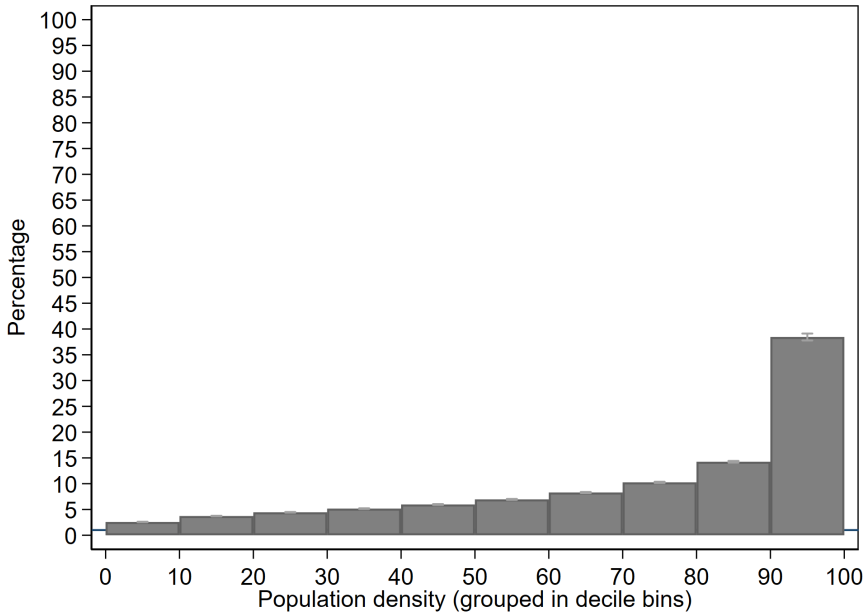
AEAT audits taxpayers' income and WT if the latter is informative for the income audit. ATC audits WT but not income. The links indicated by the red lines in the diagram therefore become active only if information is revealed to AEAT through the PIT audit, which tends to coincide with comprehensive audits.

Back to: Motivation Institutional setting

More on WT data I



A) total wealth



B) taxable wealth

More on WT data II

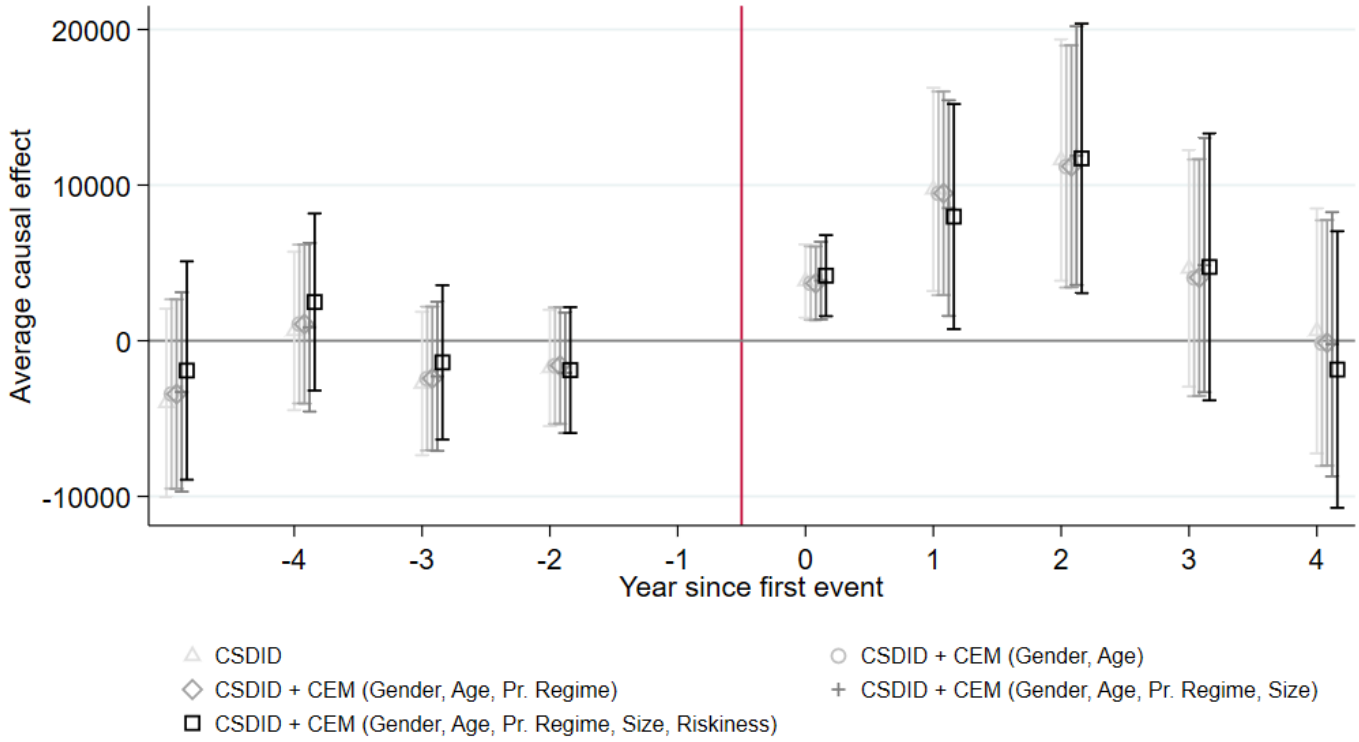
Table 3: Number of declarations by fiscal year

Fiscal Year	Number of declarations
2011	45,205
2012	66,724
2013	69,171
2014	71,157
2015	72,588
2016	74,519
2017	76,548
2018	77,942
2019	80,140
2020	82,181

Note: Authors' calculations based on data provided by the ATC.

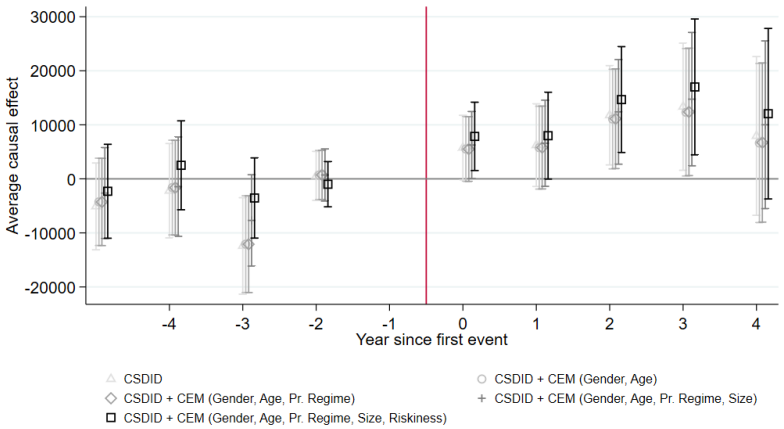
Back to WT

CSDID approach - Tax liability

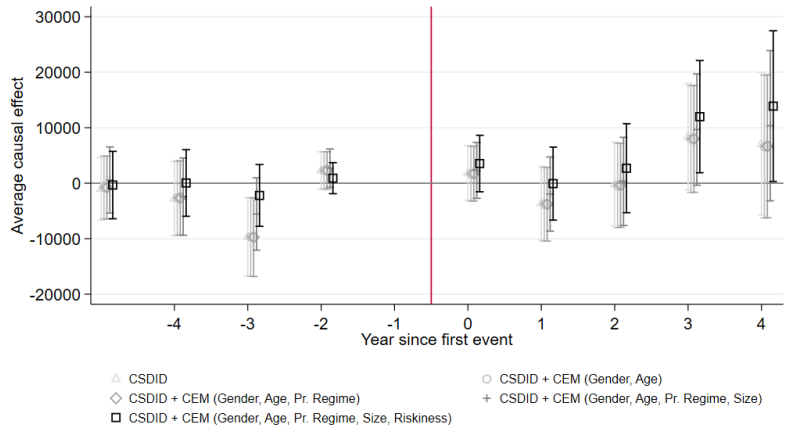


Note: The figure reports the estimates of the period-specific treatment effects of tax audits on different margins of outcome reported in levels obtained through the approach proposed by Callaway and Sant'Anna (2021). They are obtained by applying the Sant'Anna and Zhao (2020) estimator on the same CEM-matched samples as for the CEM-TWFE. Individual and year fixed effects are controlled for. The excluded category is the last period before treatment (T=-1); 95 percent confidence intervals are shown and based on S.E. clustered at taxpayer level.

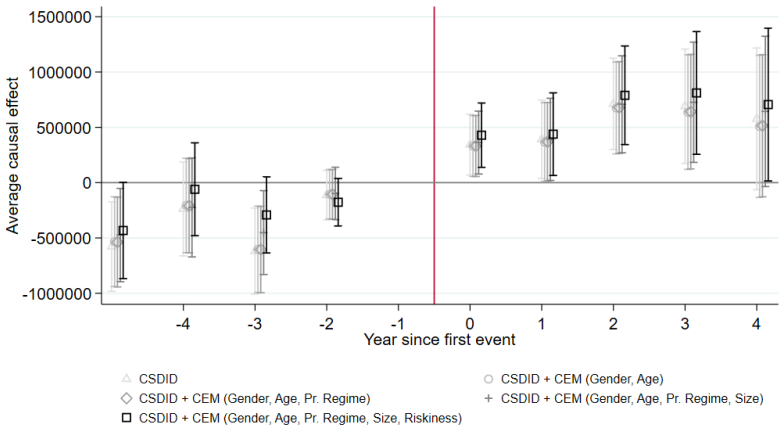
CSDID - components of the aggregate impact



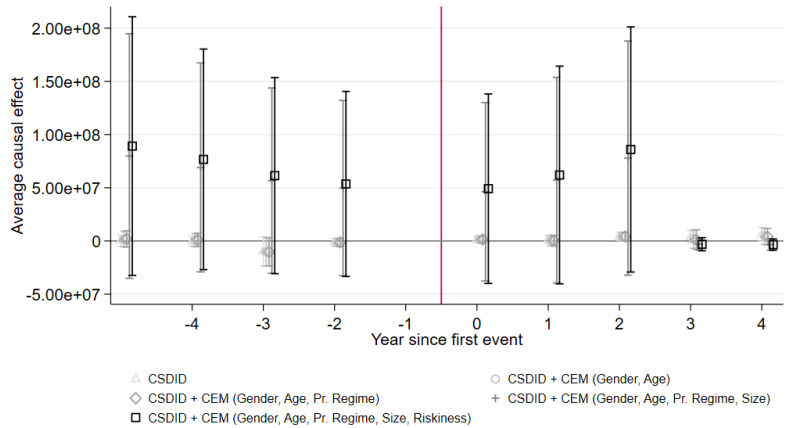
Tax Payable



Tax Credits



Taxable items



Non-taxable items

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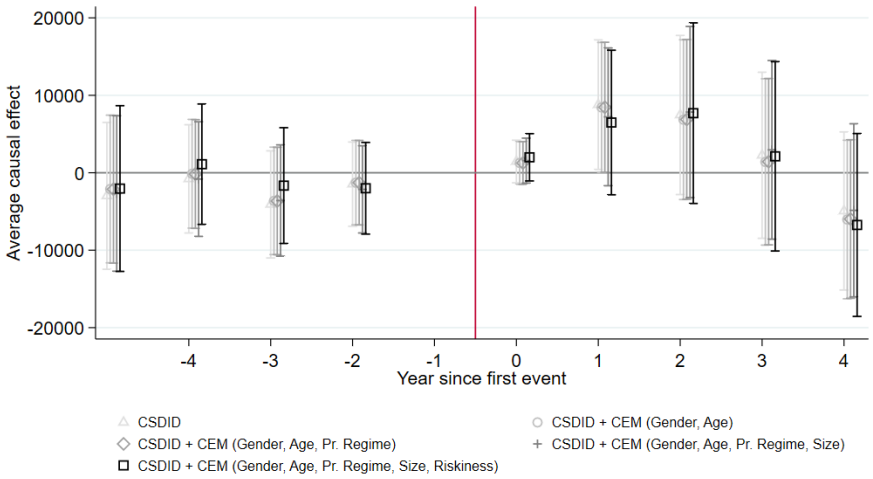
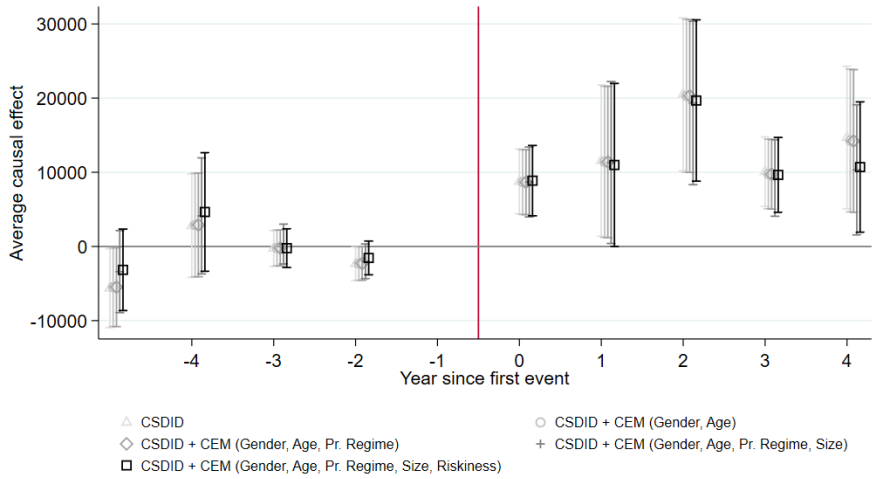
CSDID: AEAT vs. ATC (WT liability)

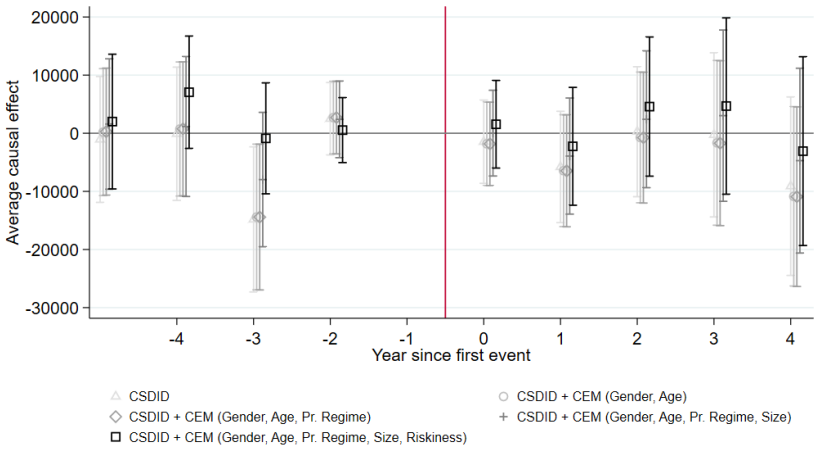


AEAT

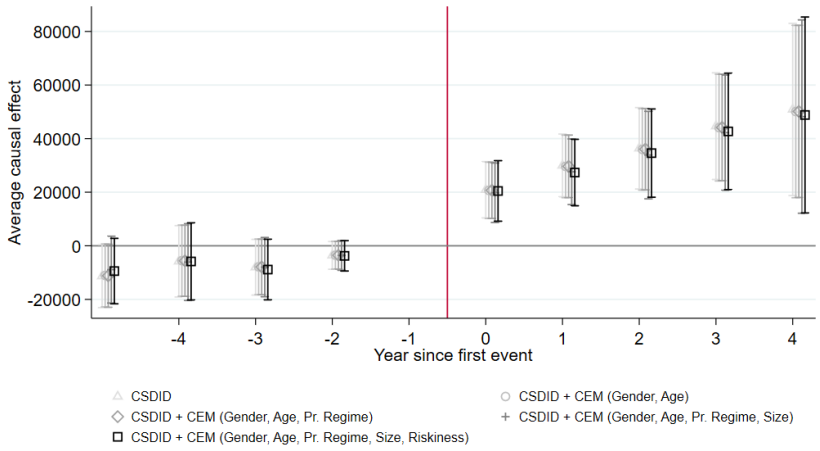


ATC

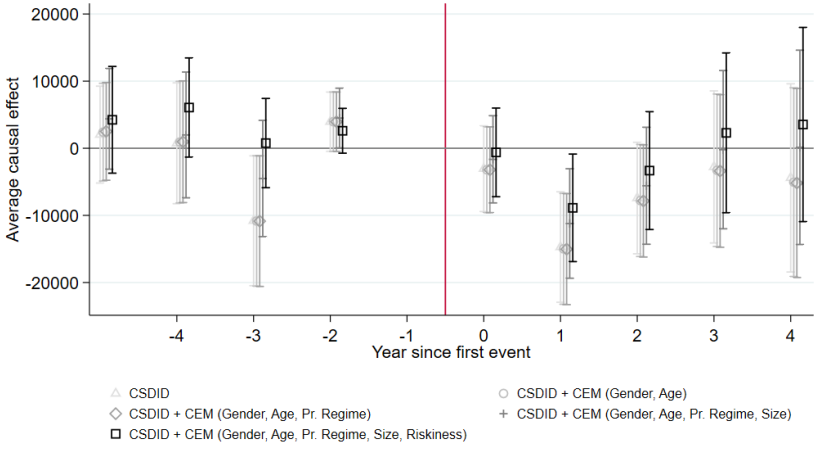
CSDID: AEAT vs. ATC (Tax payable & Tax credits)



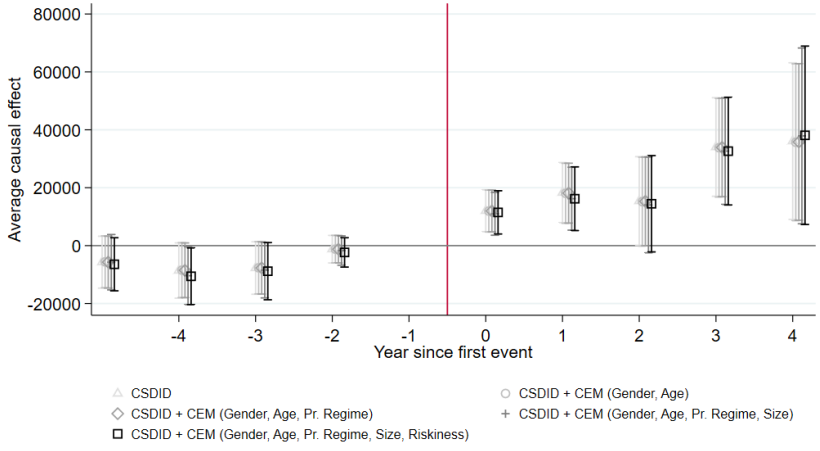
AEAT - Tax payable



ATC - Tax payable

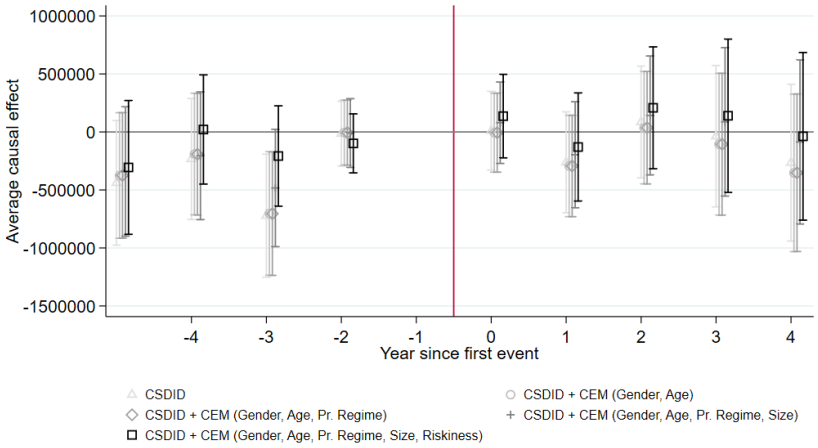


AEAT - Tax credits

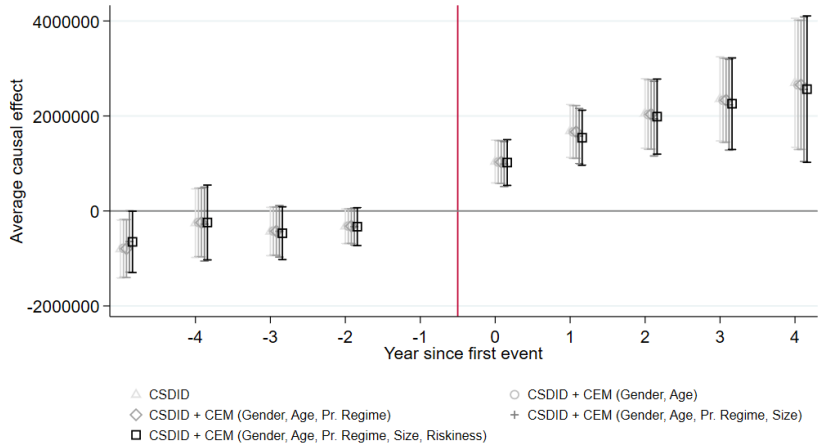


ATC - Tax credits

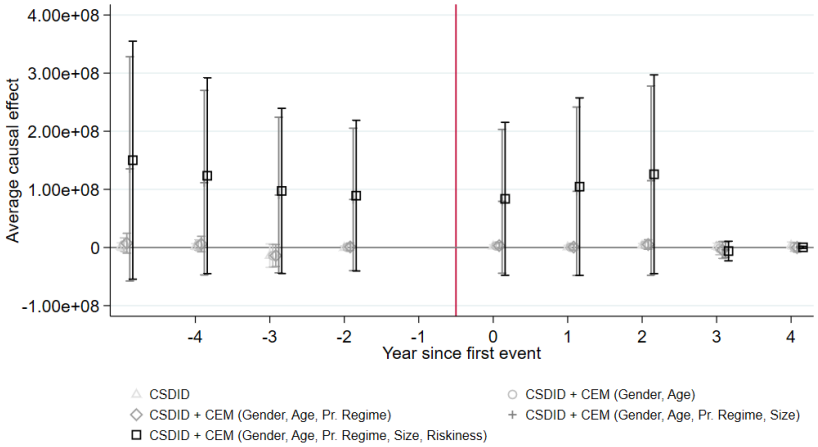
CSDID: AEAT vs. ATC (Taxable/exempt items)



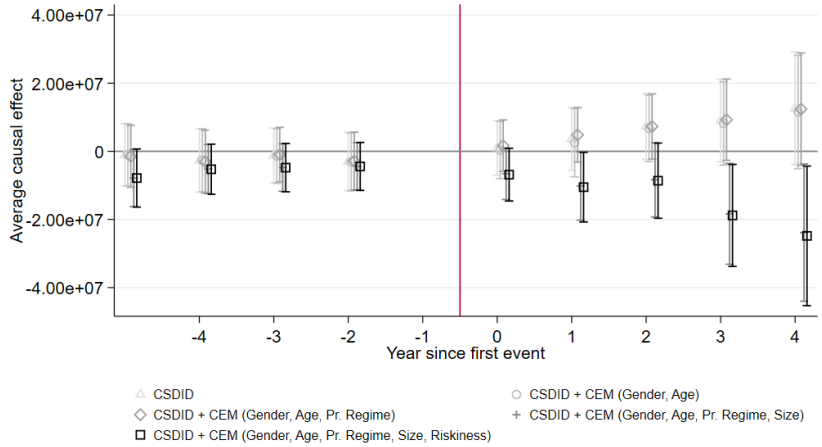
AEAT - Taxable items



ATC - Taxable items



AEAT - Non-taxable items



ATC - Non-taxable items

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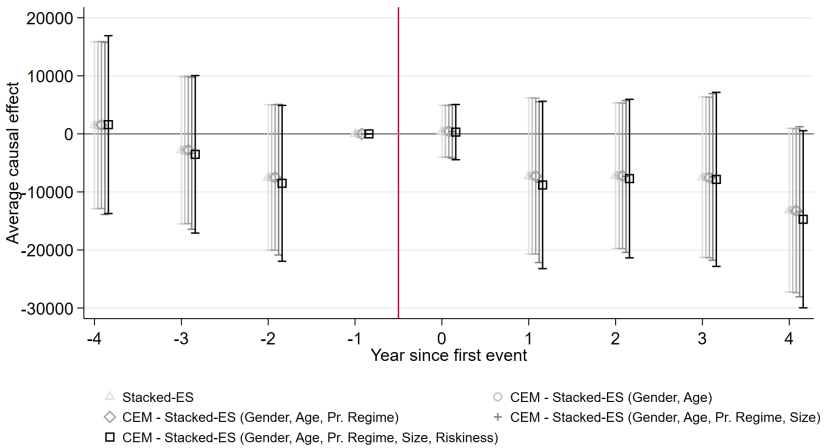
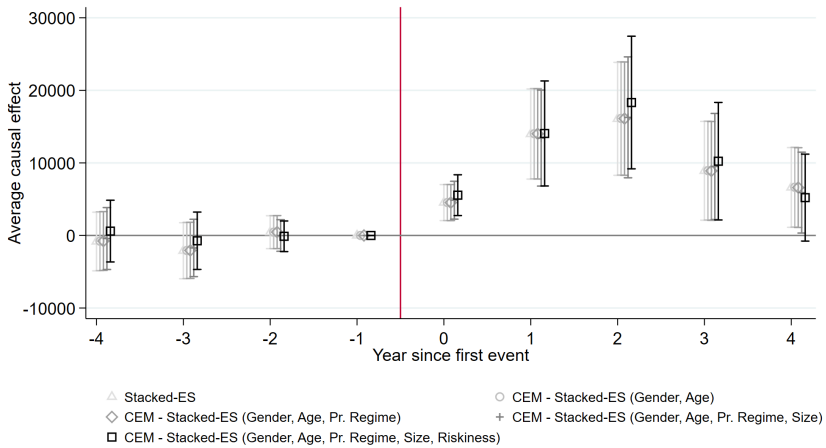
Heterogeneities - Audit outcome



Compliant



Noncompliant

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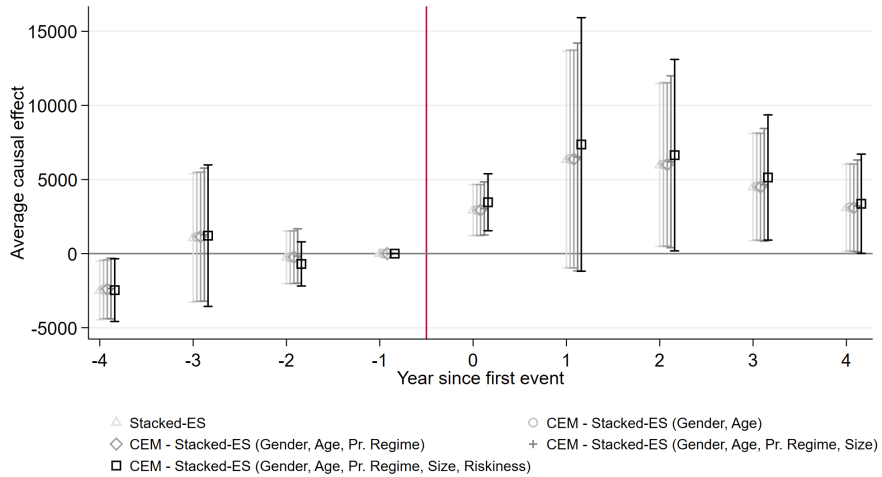
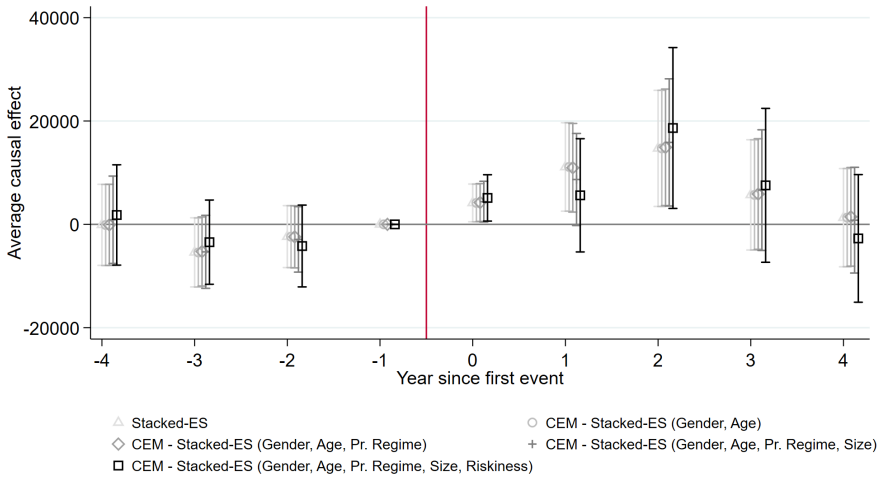
Heterogeneities - Wealth deciles



Deciles 1-9



Top decile

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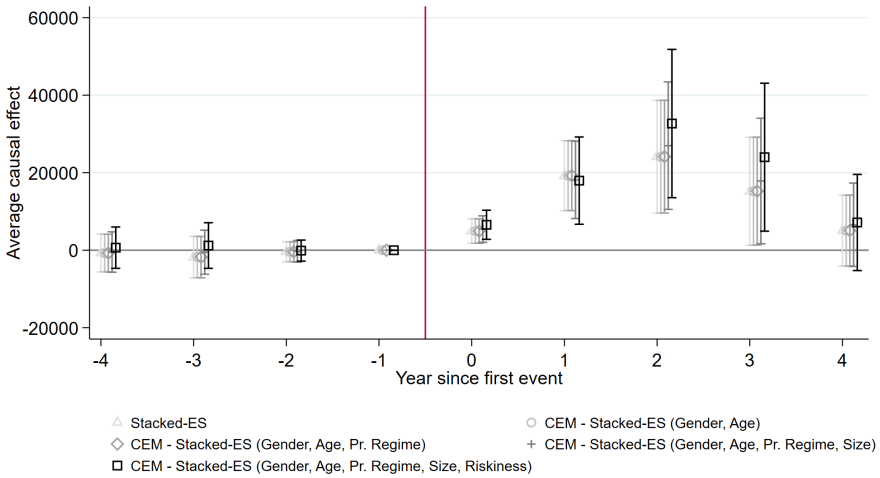
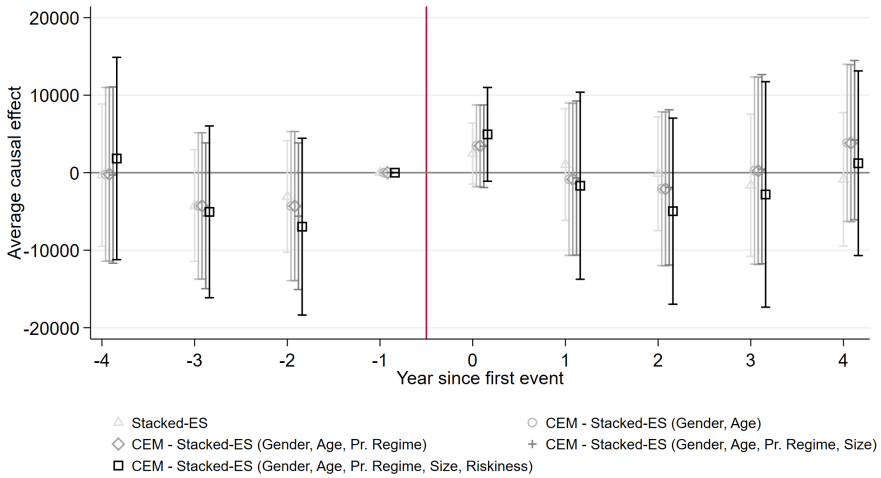
Heterogeneities - Age



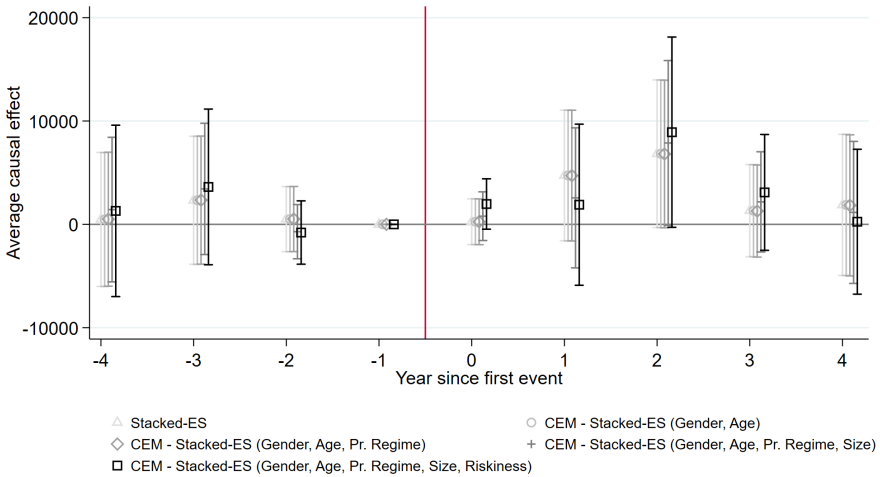
Below 65 years old



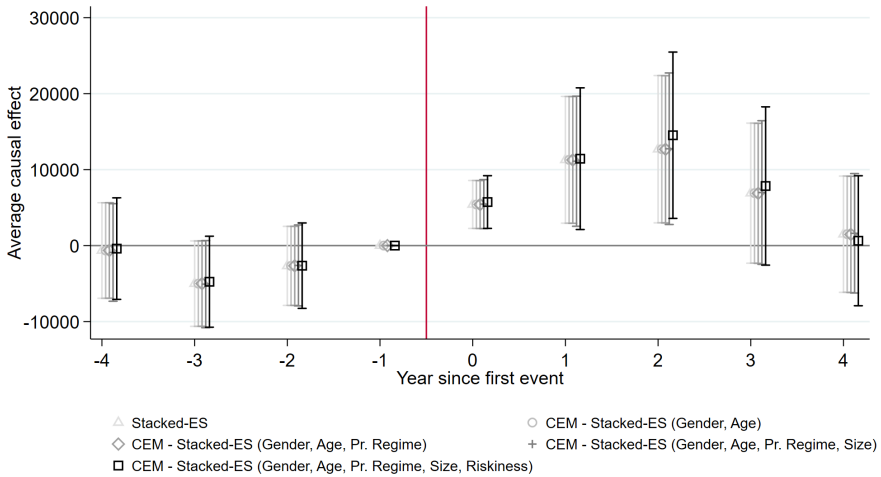
Above 65 years old

Back to conclusions

Heterogeneities - Gender



Female



Male

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