

Online appendix to “Corporate Minimum Tax and the Elasticity of Taxable Income: Evidence from Administrative Tax Records”

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TABLE A1—MINIMUM TAX CREDIT CARRY-FORWARDS (EXAMPLE 1)

Year	VAT	Turnover	MT	Tax liability before MT and MTCF	MT credit _t	MT credit _{t-1}	Non- negative (5) - (4)	MTCF _t	Tax paid
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2014	Yes	<500k	960	680	280	-	0	0	960
2015	Yes	<500k	960	1,100	0	280	140	140	960

Notes: MT – minimum tax, MTCF – minimum tax credit carry-forwards.

TABLE A2—MINIMUM TAX CREDIT CARRY-FORWARDS (EXAMPLE 2)

Year	VAT	Turnover	MT	Tax liability before MT and MTCF	MT credit _t	MT credit _{t-1}	MT credit _{t-2}	MT credit _{t-3}	Non- negative (5) - (4)	MTCF _t	Tax paid
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
2014	No	<500k	480	250	230	-	-	-	0	0	480
2015	No	<500k	480	300	180	230	-	-	0	0	480
2016	No	<500k	480	450	30	180	230	-	0	0	480
2017	No	<500k	480	-500	480	30	180	230	0	0	480
2018	No	<500k	480 ^a	700	0	480	30	180	220	220	480

Notes: MT – minimum tax. MTCF – minimum tax credit carry-forwards. ^a In 2018, MT is the minimum tax that would have been applied in the given category if minimum tax had not been abolished.

TABLE A3—ESTIMATED IMPACT OF THE FISCAL POLICIES ADOPTED IN 2013 AND 2014

	2013	2014
Social security contributions (SSC)		
- increase and the unification of maximum bases for SSC assessment	+160	
- increase in SSC for self-employed	+27	
- changes in the fully-funded pillar of the public pension system	+695	
- allowance for long-term unemployed		-5
Personal income tax (including self-employed)		
- introduction of the second (25%) tax rate	+53	
- limitation of the allowance for self-employed	+18	
Corporate income tax		
- change in the tax rate from 19% to 23%	+230	
- change in the tax rate from 23% to 22%		-57
- introduction of the minimum tax		+112
- changes in the rules for loss carry-forwards		+37
Other fees and tariffs		
- extension of a special levy in the banking sector	+92	
- levy on enterprises in regulated industries	+79	
- re-introduction of television/radio licence fee	+74	
- increase in vehicle registration fee	+27	
- extension of the levy on enterprises in regulated industries		+80
- changes in the levy on motor vehicles		-8

Notes: The estimated fiscal impacts are expressed in € millions. Source: Stability Programme of the Slovak Republic for 2014 - 2017 (Ministry of Finance of the Slovak Republic, 2014)

TABLE A4—DISPOSITION OF THE MINIMUM TAX CREDITS

Tax year	Tax credits accumulated (1)	Tax credits used, by year ^a			Final tax credit disposition	
		t+1	t+2	t+3	Used	Lost ^b
		(2)	(3)	(4)	(5)=(2)+(3)+(4)	(6)=(1)-(5)
<i>All companies</i>						
2014	82,086	12,053	7,143	5,420	24,616	57,470
2015	73,835	7,001	6,523	5,677	19,202	54,633
2016	74,643	7,060	7,631	3,714	18,405	56,238
2017	77,263	8,695	5,655	3,016	17,366	59,896
<i>Bottom MT category: non-VAT registered companies with turnover below €500,000</i>						
2014	17,205	1,750	1,270	940	3,960	13,245
2015	16,460	1,133	1,094	755	2,982	13,478
2016	16,209	1,014	987	377	2,378	13,831
2017	16,563	1,114	614	240	1,968	14,596
<i>Middle MT category: VAT registered companies with turnover below €500,000</i>						
2014	46,382	5,721	3,950	2,956	12,628	33,754
2015	40,950	3,351	3,434	2,901	9,686	31,264
2016	41,447	3,153	3,858	2,037	9,048	32,398
2017	42,721	3,951	2,852	1,443	8,247	34,474
<i>Top MT category: Companies with turnover above €500,000</i>						
2014	20,349	4,582	1,923	1,523	8,028	12,321
2015	18,071	2,516	1,995	2,022	6,533	11,538
2016	18,636	2,893	2,786	1,300	6,979	11,656
2017	19,614	3,630	2,189	1,333	7,152	12,462

Notes: The statistics are reported in €1,000 in current prices. ^a To obtain the amount of tax credits used in a given tax year, we assume that companies always first carry forward the oldest tax credits that they previously accumulated. ^b Lost minimum tax credits are the stocks of tax credits that disappear due to firm terminations, mergers, acquisitions or because firms did not earn sufficient taxable income above corporate tax floors to use all minimum tax credits.

TABLE A5—THE PROBABILITY OF HAVING TAXABLE INCOME AT THE MINIMUM TAX FLOORS

Outcome: P(At kink)	Bottom category (1)	Middle category (2)	Top category (3)
Below MT($t-1$) X 2011	-0.003 [0.007]	-0.003 [0.003]	-0.000 [0.002]
Below MT($t-1$) X 2012	-0.005 [0.006]	-0.003 [0.003]	-0.001 [0.002]
Below MT($t-1$) X 2013	$\dot{}$ [.]	$\dot{}$ [.]	$\dot{}$ [.]
Below MT($t-1$) X 2014	0.152 [0.007]	0.052 [0.003]	0.031 [0.003]
Below MT($t-1$) X 2015	0.053 [0.006]	0.020 [0.003]	0.018 [0.003]
Below MT($t-1$) X 2016	0.044 [0.007]	0.014 [0.003]	0.014 [0.003]
Below MT($t-1$) X 2017	0.030 [0.007]	0.014 [0.003]	0.012 [0.003]
Below MT($t-1$) X 2018	0.032 [0.006]	0.024 [0.003]	0.007 [0.002]
Firm FE	✓	✓	✓
Industry $\times$ year FE	✓	✓	✓
Covariates	✓	✓	✓
Avg. Outcome	0.062	0.038	0.008
N	307,360	613,907	195,452
R2	0.408	0.270	0.317

Notes: The table reports coefficient estimates from Eq.(7) when the examined outcome is a binary indicator for a company having taxable income within a fixed €450 bandwidth around the corresponding minimum tax floor in a given fiscal period. All specifications include company- and “industry $\times$ year” fixed effects. Covariates include a non-interacted indicator for taxable income being below the corresponding minimum tax amount in year ($t - 1$) and dummy variables for employment size categories, ownership type and legal form. Standard errors in brackets are clustered at the company level.

TABLE A6—EXTENSIVE-MARGIN BUSINESS RESPONSE TO THE 2014 MINIMUM TAX REFORM

Outcome: P(closing-down)	All companies			Companies with previously non-zero turnover	
	Bottom category (1)	Middle category (2)	Top category (3)	Bottom category (4)	Middle category (5)
Below MT($t-2$) X 2012	-0.012 [0.010]	-0.015 [0.010]	-0.019 [0.041]	-0.016 [0.011]	-0.014 [0.010]
Below MT($t-2$) X 2013	$\dot{}$ [.]	$\dot{}$ [.]	$\dot{}$ [.]	$\dot{}$ [.]	$\dot{}$ [.]
Below MT($t-2$) X 2014	0.011 [0.007]	0.014 [0.007]	0.023 [0.022]	0.005 [0.007]	0.006 [0.007]
Below MT($t-2$) X 2015	0.044 [0.007]	0.018 [0.007]	-0.013 [0.023]	0.021 [0.007]	0.014 [0.007]
Industry $\times$ year FE	✓	✓	✓	✓	✓
Covariates	✓	✓	✓	✓	✓
Avg. Outcome	0.113	0.121	0.274	0.084	0.110
N	72,943	66,485	9,525	49,997	61,979
R2	0.046	0.033	0.143	0.030	0.027

Notes: The table reports coefficient estimates from Eq.(13) when the examined outcome is a binary indicator for a company having been liquidated in a given fiscal period. All specifications account for “industry $\times$ year” fixed effects. Covariates include a non-interacted indicator for taxable income being below the corresponding minimum tax amount in year $t - 2$ and dummy variables for employment size categories, ownership type and legal form. Standard errors in brackets are clustered at the company level.

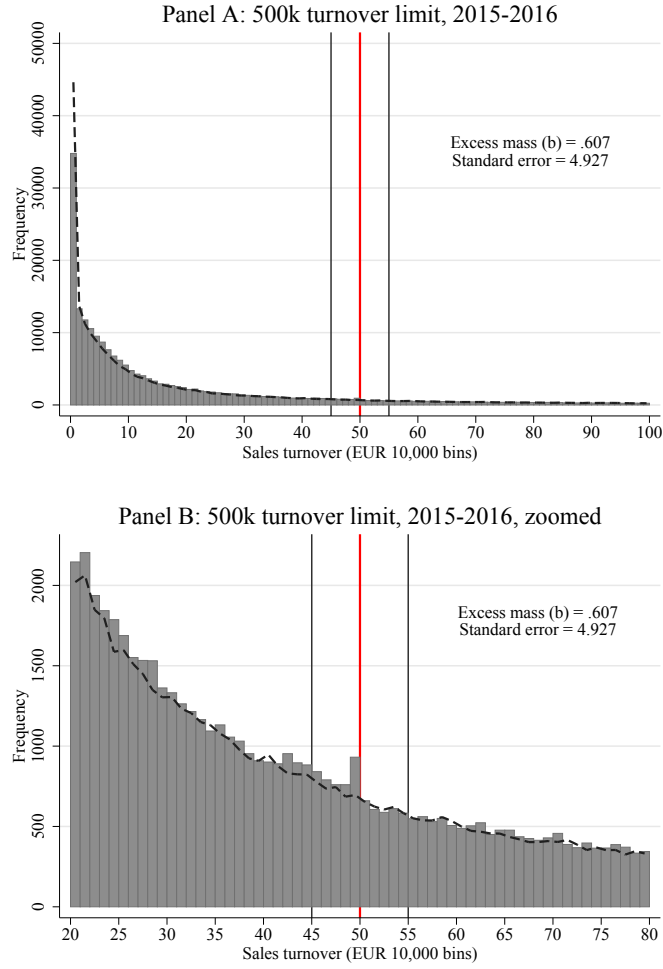


FIGURE A1. SALES TURNOVER DISTRIBUTIONS AROUND THE €500,000 THRESHOLD

Notes: The figure reports estimates of corporate bunching at €500,000 turnover threshold, which determines whether companies belong to the middle or top minimum tax category. Series shown in bars are empirical histograms of turnover in 2015-2016. Each bar shows the number of observations in €10,000 bins. Dashed lines are the counterfactual distributions estimated using the control group method based on appropriately-scaled 2010-2013 empirical distributions. The excluded intervals around the €500k limit are demarcated by vertical solid lines. Panel A shows the entire distribution of corporate turnover below €1 million. Panel B zooms in on a symmetric 200k-800k window around the threshold. Standard errors are obtained using a parametric bootstrap procedure with replacement.

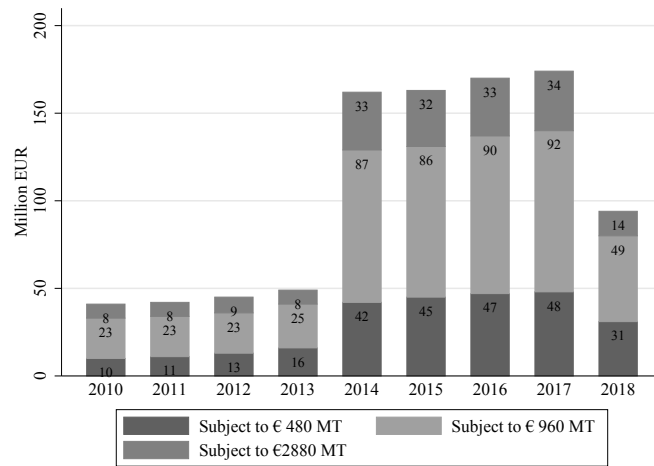


FIGURE A2. GOVERNMENTAL TAX REVENUE FROM SMALL CORPORATIONS IN 2010-2018

Notes: The figure plots government fiscal revenue in 2010-2018 (in 2010 prices) from small corporations with tax liability below €4,000. These companies are expected to be those primarily affected by the 2014 minimum tax reform. The sharp jump in revenue after 2014 almost exactly coincides with the fiscal impact of the minimum tax reform estimated by the Ministry of Finance of the Slovak Republic (2014).

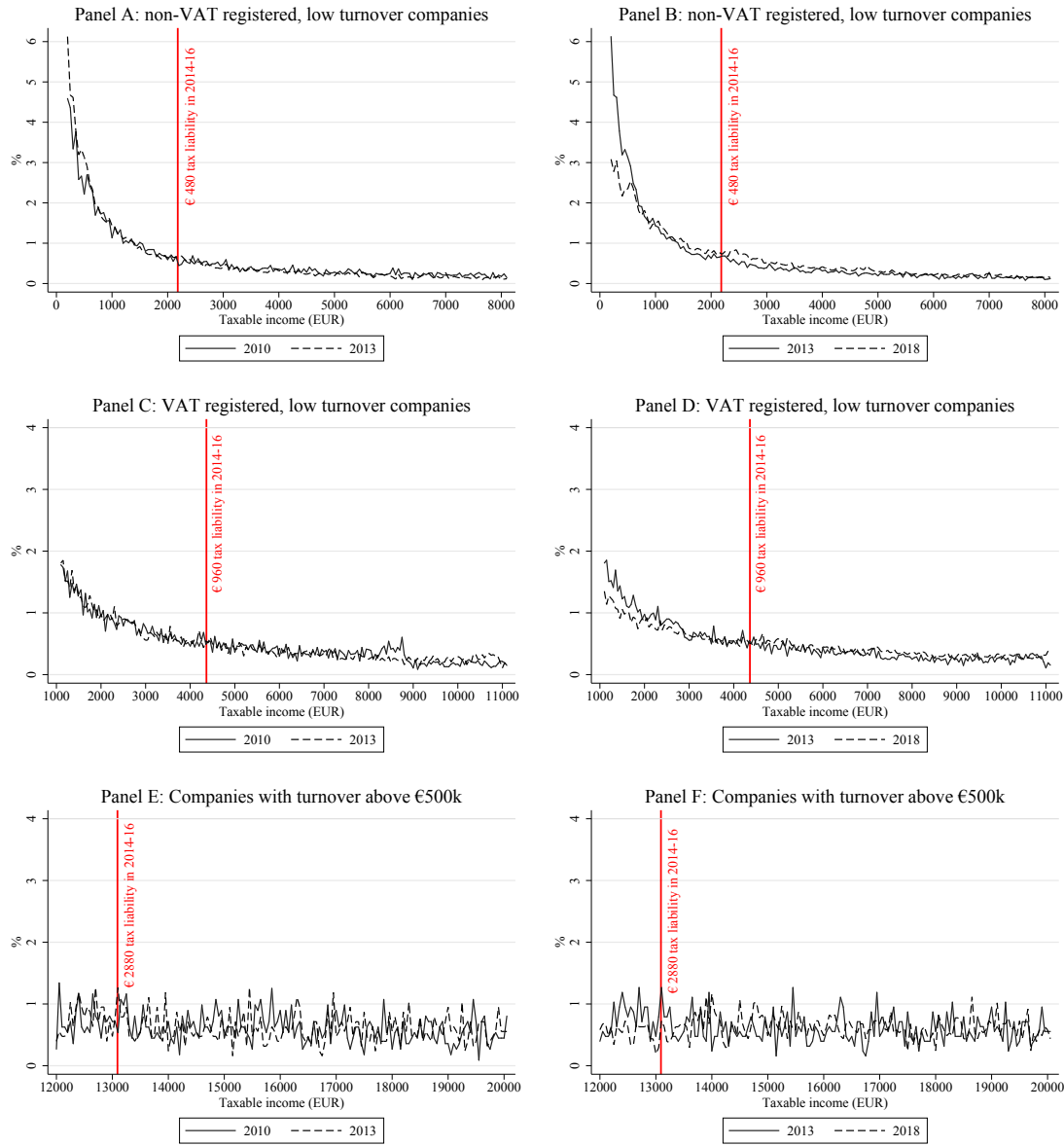


FIGURE A3. STATIONARITY OF TAXABLE INCOME DISTRIBUTIONS

Notes: The figure compares empirical distributions of corporate taxable income over time. Panels A and B compare the density distributions for low-turnover, non-VAT registered companies from the bottom minimum tax category across 2010 and 2013, and across 2013 and 2018, respectively. Panels C and D make the same comparisons for VAT registered companies from the middle minimum tax category. Panels D and E make these comparisons for high-turnover companies from the top corporate category. The density distributions are re-scaled so as to contain equal numbers of observations across years compared. The red vertical lines are the values of taxable income when companies exceed the minimum tax in 2014-2016.

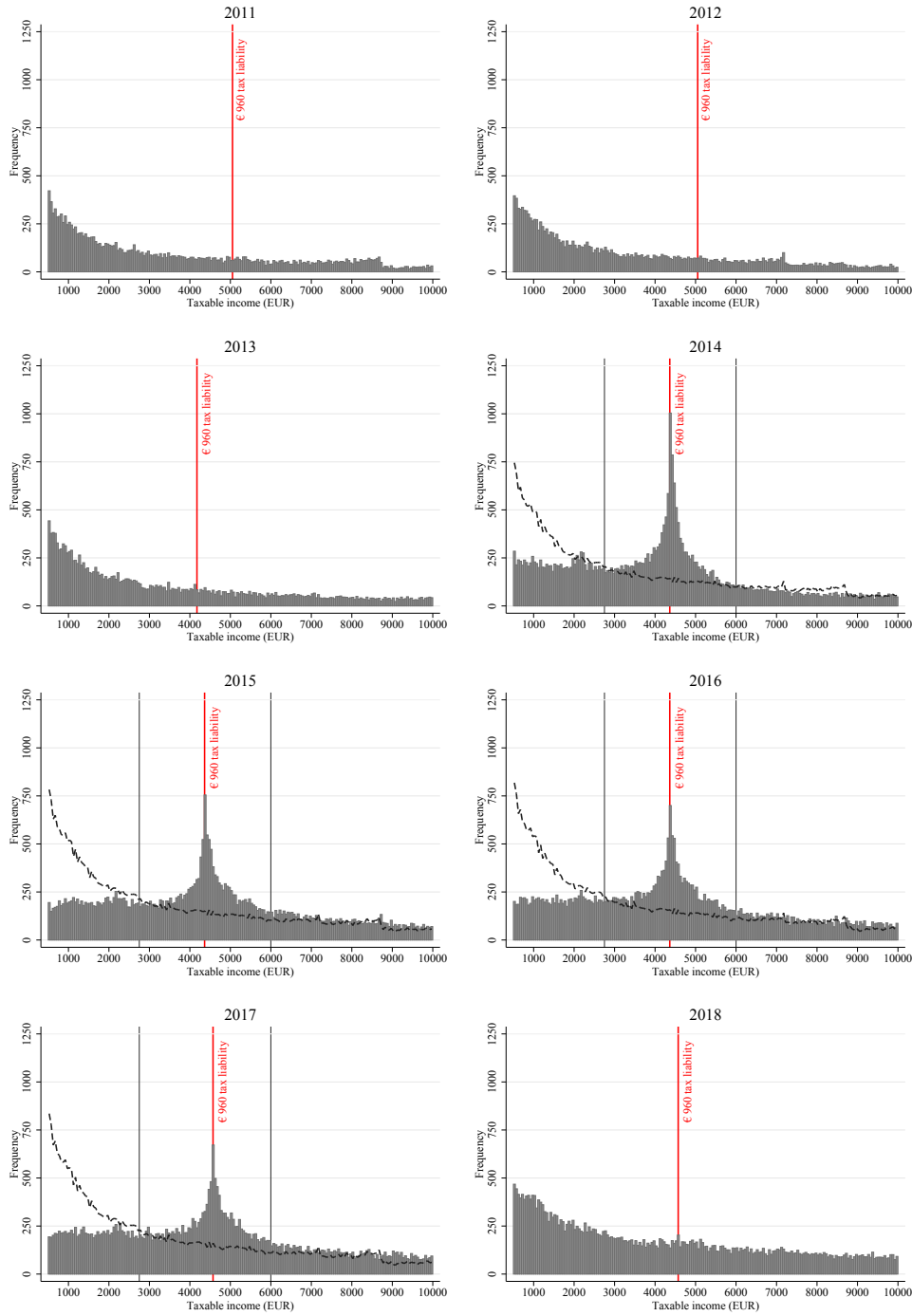


FIGURE A4. TAXABLE INCOME DISTRIBUTIONS FOR LOW-TURNOVER, VAT REGISTERED COMPANIES

Notes: The figure shows 2011-2018 taxable income distributions for VAT registered firms with turnover below €500k. Each bar shows the number of companies in €50 bins. The red vertical lines mark the points when firms exceed the €960 tax liability, and therefore the minimum tax in 2014-2017. The dashed lines above the histograms in 2014-2017 are the re-scaled density distributions of corporate taxable income from 2010-2013.

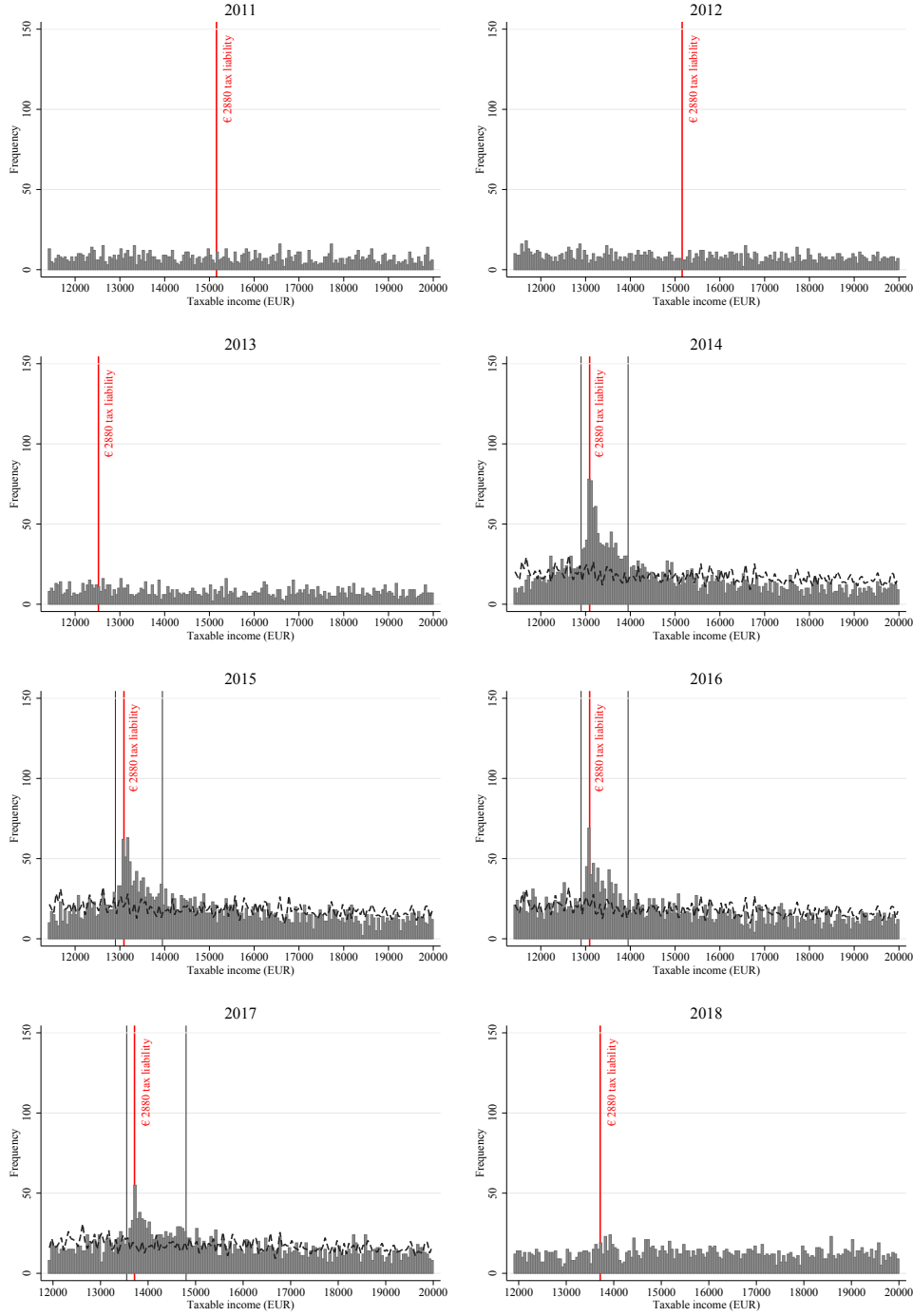


FIGURE A5. TAXABLE INCOME DISTRIBUTIONS FOR COMPANIES WITH TURNOVER ABOVE €500k

Notes: The figure shows 2011-2018 taxable income distributions for firms with turnover above €500k. Each bar shows the number of companies in €50 bins. The red vertical lines mark the points when firms exceeded the €2880 tax liability, and therefore the minimum tax in 2014-2017. The dashed lines above the histograms in 2014-2017 are the re-scaled density distributions of corporate taxable income from 2010-2013.

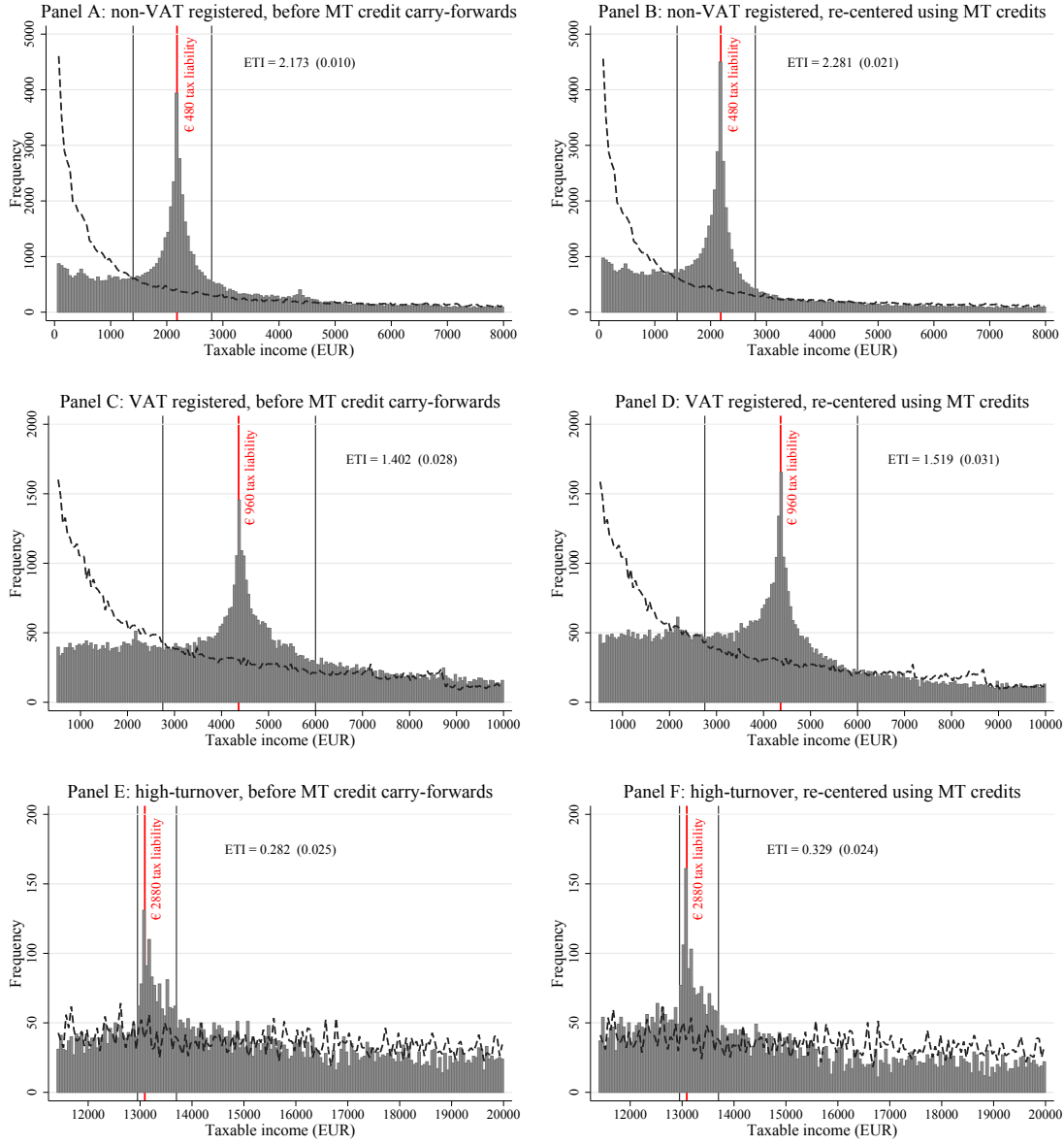


FIGURE A6. TAXABLE INCOME DISTRIBUTIONS BEFORE AND AFTER RE-CENTERING THE TAX FLOORS FOR FIRM-SPECIFIC MINIMUM TAX CREDITS, ALL COMPANIES

Notes: The histograms show the empirical distributions of taxable income around the corporate tax floors in 2015-2016 for all companies, including those with no accumulated stock of minimum tax credits. Panels A and B show the histograms for non-VAT registered firms from the bottom minimum tax category. Panels C and D show the histograms for VAT-registered firms from the middle category. Panels E and F show the histograms for the highest-turnover firms from the top category. Panels A, C and E show the distributions before re-centering the tax floors for carry-forwarding firms for a firm-specific stock of accumulated tax credits. Panels B, D and F show the distributions after re-centering the tax floors. The tax floors are demarcated in all panels using red vertical lines. The black vertical lines show the excluded bunching regions around the tax floors that are used to estimate the excess mass. The dashed lines above the histograms are the re-scaled pre-reform density distributions of corporate taxable income from 2010-2013. Bootstrapped standard errors for the estimated corporate ETI are in parentheses.

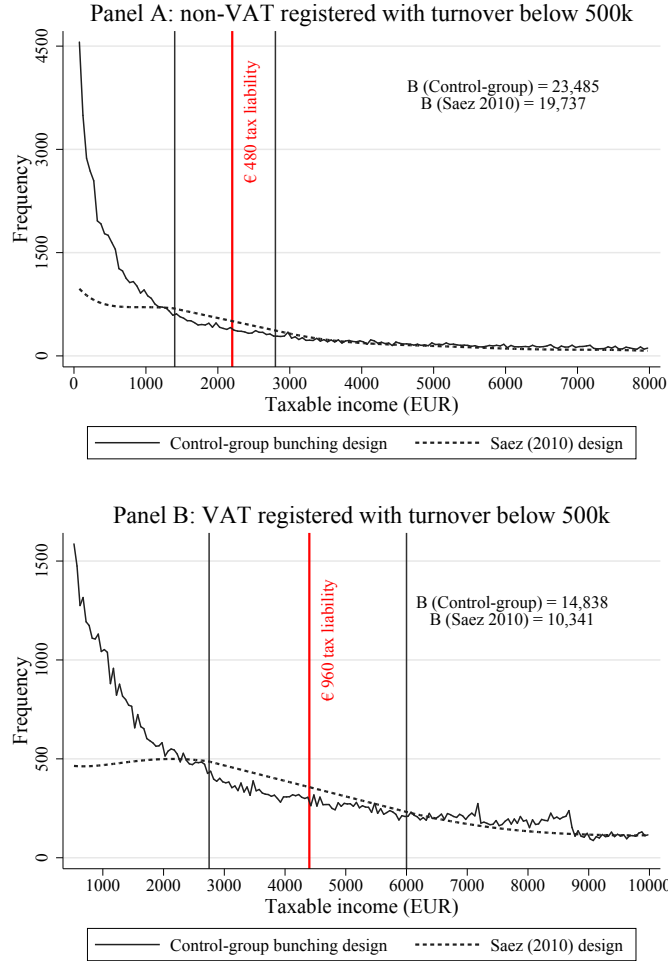


FIGURE A7. COMPARISON OF ALTERNATIVE BUNCHING DESIGNS

Notes: The figure compares counterfactual distributions estimated using alternative bunching designs. In particular, the declining solid lines correspond to the counterfactual distributions estimated using the control-group bunching approach. The declining dashed lines within the bunching region, demarcated by black vertical solid lines, correspond to the counterfactual distributions implied from the cross-sectional bunching approach by Saez (2010). Outside of the bunching region, the dashed lines correspond to the predicted values from the polynomial regressions used to fit the empirical cross-sectional distributions of taxable income. “ $B (\text{Control-group})$ ” refers to the excess mass of firms bunching at the tax floors implied from the control-group method. “ $B (\text{Saez 2010})$ ” refers to the excess mass of firms estimated using the bunching method by Saez (2010). The red solid vertical lines show the levels of taxable income when companies exceed the tax floor.

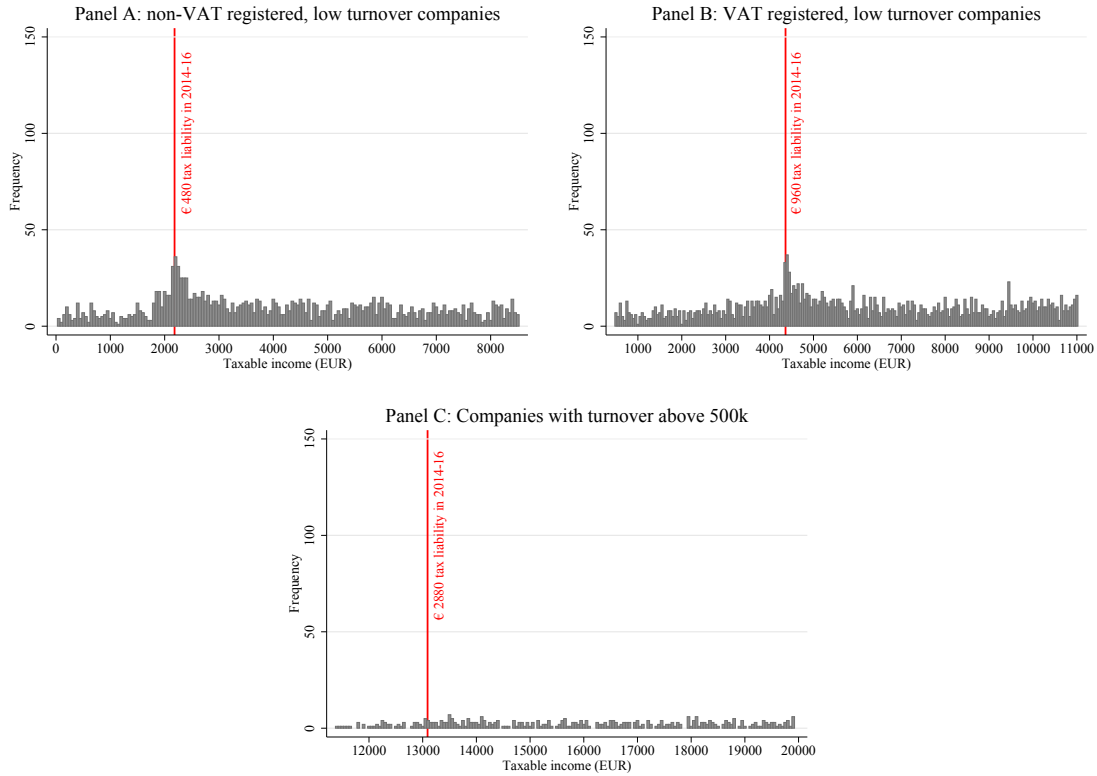


FIGURE A8. EXCESS BUNCHING THAT ORIGINATES FROM ABOVE THE TAX FLOORS

Notes: The histograms show empirical distributions of corporate taxable income in 2014 for companies which had tax liability above the bunching region in 2010-2013. Panel A shows the histogram for non-VAT registered companies in the bottom minimum tax category. Panel B shows the histogram for VAT-registered companies in the middle minimum tax category. Panel C shows the histograms for companies in the top minimum tax category with turnover above €500k. Corporate tax floors are demarcated in all panels using red vertical lines. Companies are considered to be above the bunching region if their tax liability in 2010-2013 was €100 higher than the corresponding tax floor.