Does Self-Employment Respond to Simpler Fiscal Incentives? Evidence from France

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Motivation and Goals

- Self-employment has been subject to special fiscal treatments in many countries. Path to entrepreneurship?
- France is a good quasi-laboratory: several self-employment regimes, differing in financial incentives and administrative simplicity.
- New access to French tax returns data since 1994.
- Goal 1: Anatomy of self-employment in France. Who are the self-employed, what has changed?
- Goal 2: Study impact of self-employment reforms and statuses on new entry, regime switching, incomes.
- Goal 3: Estimate behavioral elasticities.
- Goal 4: Does administrative simplicity matter?

Main Findings

- Self-employed are: male, older, more likely to be retired, less likely to be unemployed, richer.
- 1999 reform which expanded thresholds: fast switching to more generous regime, no new entry, but growth in business size.
- 2008 reform that created simpler status: slow adjustment and new entry of smaller businesses.
- People respond to regime eligibility thresholds. But new regime takes time to adjust to and optimization is progressive.
- There is significant income bunching. Adjusts to threshold movements.
- Small hassle costs are enough to explain full extent of bunching.

Related Literature

Taxation and entrepreneurship: Cullen and Gordon (2006,2007), Gentry and Hubbard (2000), Bruce (2000).

Determinants of entrepreneurship: Hamilton (2000), Schoar (2010), Adelino, Schoar and Severino (2015), Schmalz, Sraer, and Thesmar (2016).

Bunching methods: Saez (2010), Chetty *et al.* (2011), Kleven and Waseem (2013), Kleven (2016), Best *et al.* (2015), Best and Kleven (2016), Best *et al.* (2015), Chetty *et al.* (2013).

Empirical Studies with French Tax Data: Piketty (...), Landais (2013), Garbinti *et al.* (2016, 2017).

Outline of this Talk

1. Institutional Background
2. Data and Descriptive Statistics
3. Two Key Reforms: Expansion vs. Simplification
4. Regime Choice
5. Income Responses
6. Dynamic Adjustments
7. Elasticity Estimation

Institutional Background

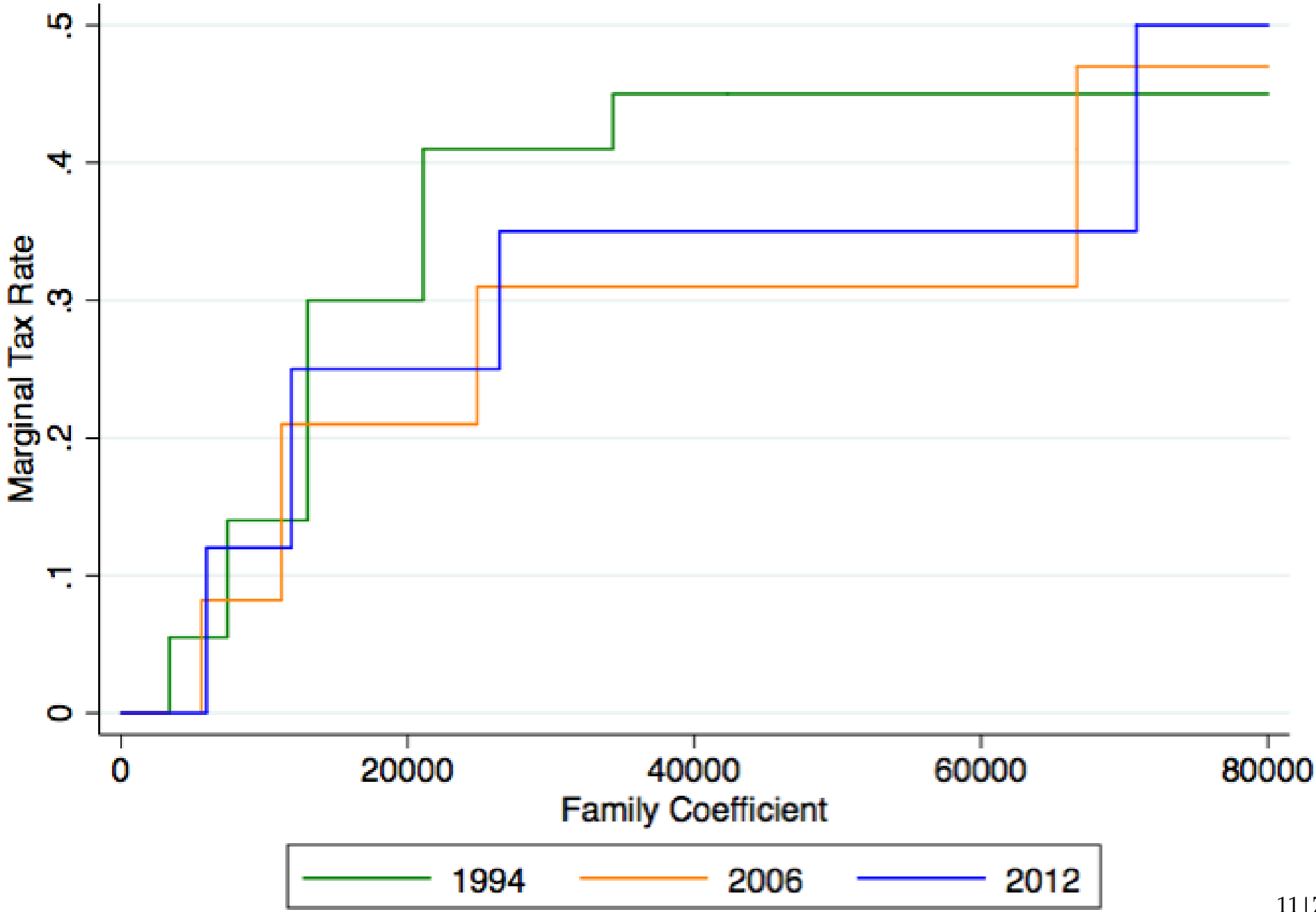

la parisienne


cgt
NOUS NE SOMMES
LA CHAIR A PATRON
En lutte
Marseille Ville
Reuters

French Tax System Peculiarity

- "Family coefficient" is total taxable income Y divided by number of parts N, $FC = Y/N$.
- 2 adults have $N = 2$, +1 kid $N = 2.5$, + 2 kids $N = 3$, + 3 kids $N = 4$.
- FC determines tax bracket.
- Tax paid:
  $T(FC, N) = N \times [\sum_{m=1}^{M-1} \tau_m \times (\underline{fc_m} - \underline{fc_{m-1}}) + \tau_M \times (fc - \underline{fc_{M-1}})]$
- Same taxable income can imply very different tax rates for different people.

French tax system: Tax Rates Exemples



Three Self-employed Regimes in 2016

Regime	(1) Standard	(2) Simplified	(3) Super simplified
Taxable base	Net business income	Gross revenues $\times$ (1- rebate)	Gross revenues
	$(1-c)y$	$y(1-\mu)$	y
Tax rate	Income tax rate	Income tax rate	Flat rate
Registration	Standard	Standard	Simplified
Accounting requirements	Detailed	Only for audit	Only for audit
SS rate	Standard	Standard	Flat rate
Subject to VAT	Yes	No	No
Timing of payments	Annual	Annual	Monthly or quarterly
Eligibility Threshold	Very high	$\approx$ 32K (services)	$\approx$ 32K (services)
		$\approx$ 80K (retail)	$\approx$ 80K (retail)

Pick simplified regime if: low scale, costs low relative to rebate μ, high hassle costs.

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Dynamic considerations may blur picture: inertia, slow adjustment, learning, growth prospects.

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Some activities are excluded from S, e.g.: real estate agents, civil service..

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Excluded from SS (but allowed in S), e.g.: notaries, doctors, ..

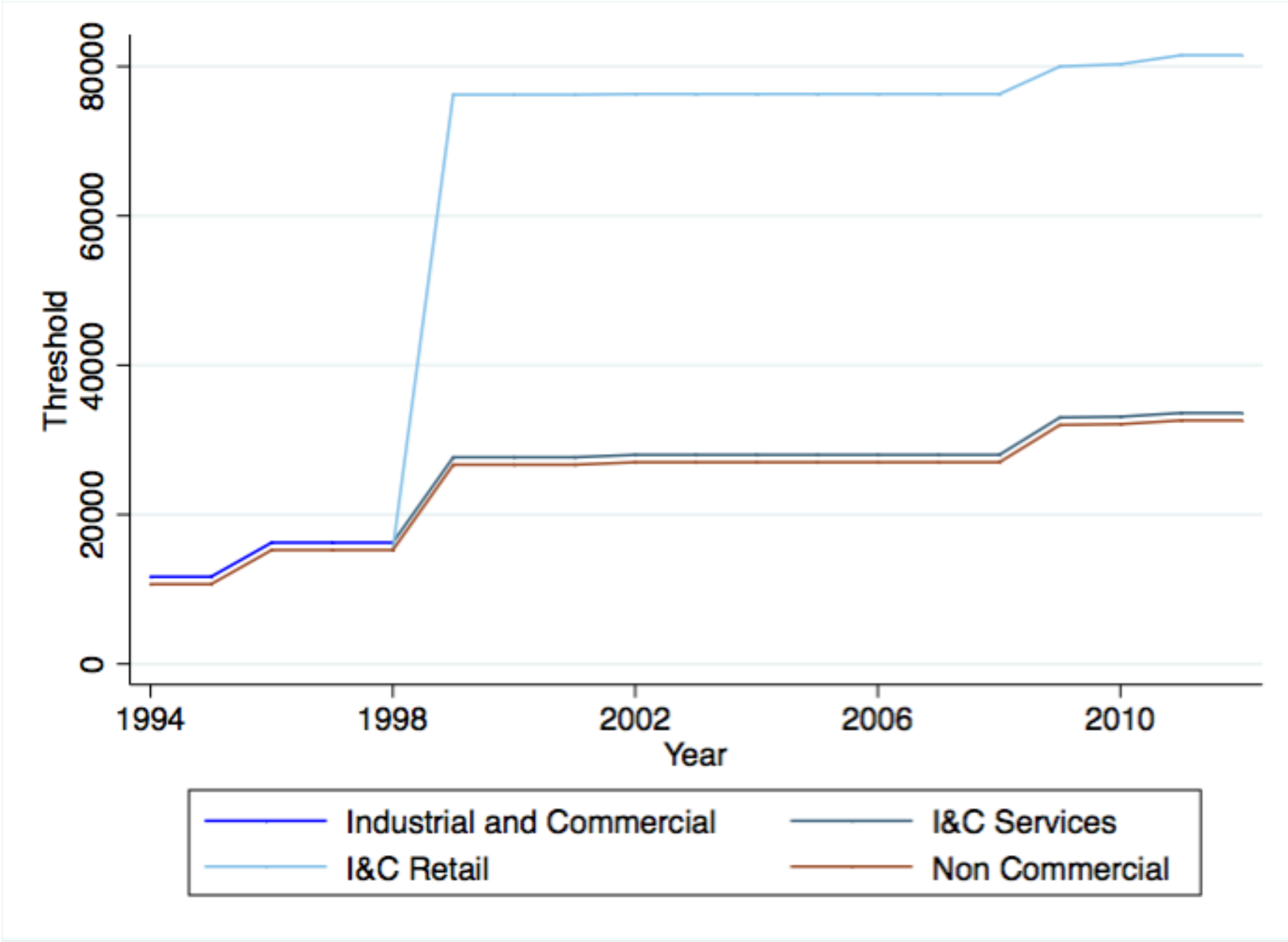
Choosing Regimes and Activity Types

- Decide by Feb of year t which regime to be in for fiscal year t. Choice is made based on expected revenues.
  - Response to notches may be i) extra suspicious (misreporting?), ii) blurred if only real responses (cannot adjust last minute).

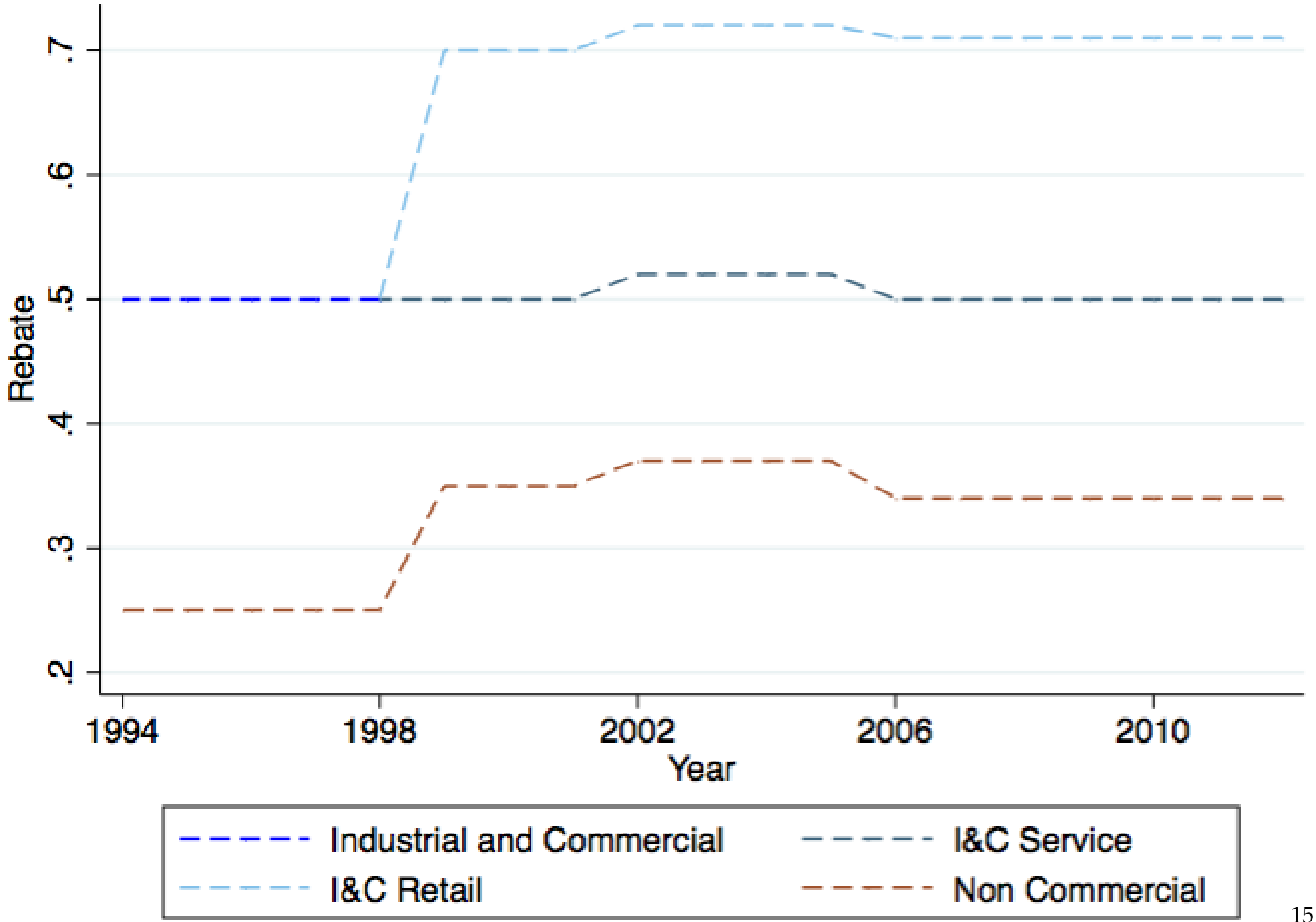
- Threshold and rebates depend on "activity" type.

- Activities for fiscal purposes not exactly aligned with economic activity:
  - Industrial and Commercial – Services: construction, plumbery, carpentry, auto repair shops, dry cleaning...
  - Industrial and Commercial – Retail (largely ignored due to very high threshold): bakery, butchery, fromageries,..
  - Non Commercial: developing and selling software, sales agent, subleasing empty real estate, doctors, notaries,...

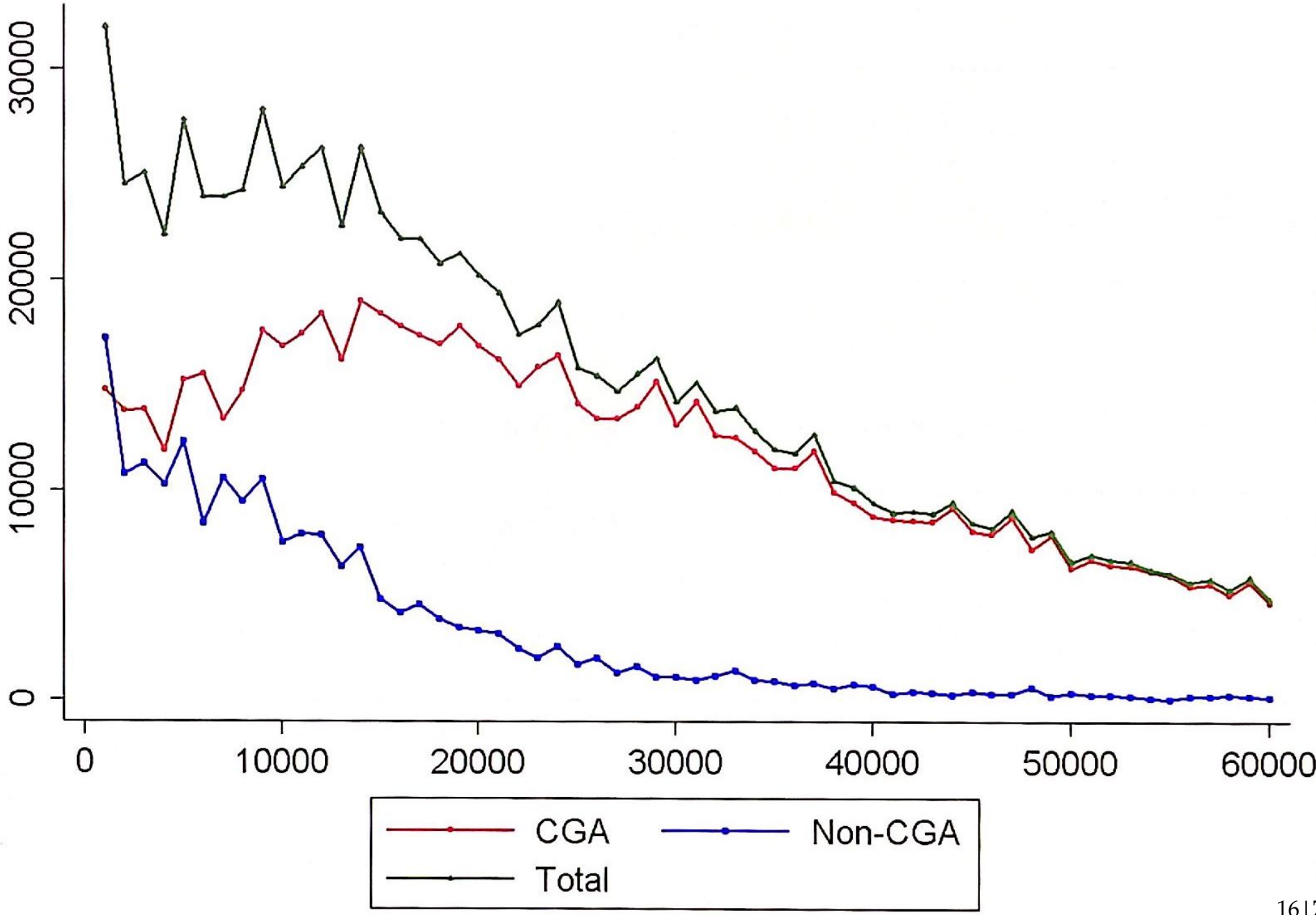
Eligibility Thresholds for Simplified and Super Simplified Regimes



Rebates for Simplified and Super Simplified Regimes



Misreporting? Membership of Certified Accounting Centers

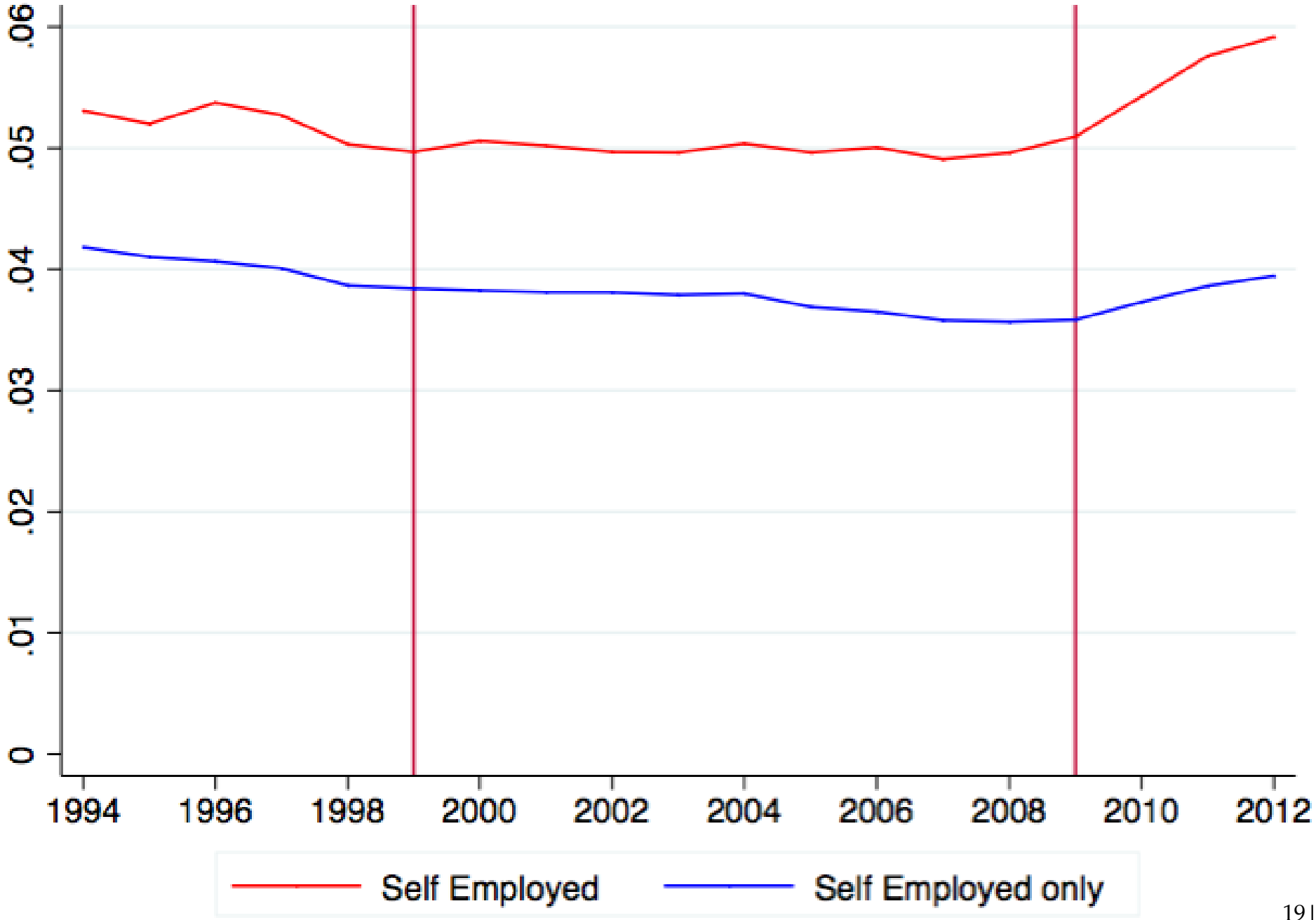


Data and Descriptive Statistics

Data

- Tax returns data from the French Internal Revenue Service 1994-2012.
- Annual sample of 500,000 households.
- Comprehensive population data for 2011 (36 million households). Being extended to 2007-2012.
- All income streams at the individual and household level.
- Demographic info (marital status, number of children, age, etc..).

Fraction of Self-Employed 1994-2012



Are the Self-Employed Different? Demographics (1994-2012)

	All	With wage income only	With self-employed income only	With any self-employed income
Age	40	40	49	48
Female	0.47	0.48	0.32	0.33
Married and Civ. Un.	0.50	0.49	0.63	0.62
Children	0.41	0.41	0.39	0.41
Number of Children	0.71	0.71	0.70	0.72
Retired	0.06	0.06	0.17	0.14
Unemployed	0.11	0.11	0.03	0.05
Population (in mill.)	532.7	497	26.3	35.6

Less women, older, more retirees, less perceive unemployment benefits.

Are the Self-Employed Different? Income (1994-2012)

	All	With wage income only	With self-employed income only	With any self-employed income
Wage Income	19576	20549	0	6005
SE Income	2004	0	32982	29934
Total NS Income	2056	39	33238	30163
Capital Income	2154	1875	5148	6047
Zero Tax rate	0.16	0.16	0.15	0.14
Low Tax rate	0.32	0.33	0.23	0.22
Medium Tax rate	0.38	0.39	0.31	0.32
High Tax rates	0.14	0.13	0.31	0.32
Population (in mill.)	532.7	497	26.3	35.6

More capital income, higher tax brackets.

Comparing Different Activities by Demographics (1994-2012)

	All	Industrial and Commercial (Retail and Service)	Non Commercial
Age	48.00	49.00	46.00
Female	0.33	0.28	0.41
Married and Civil Union	0.63	0.65	0.59
Children	0.41	0.39	0.44
Number of Children	0.73	0.68	0.80
Retired	0.14	0.16	0.11
Unemployed	0.05	0.05	0.05
Population (in mill.)	34.7	22.5	12.6

Non-Commercial: women, more children, less retired.

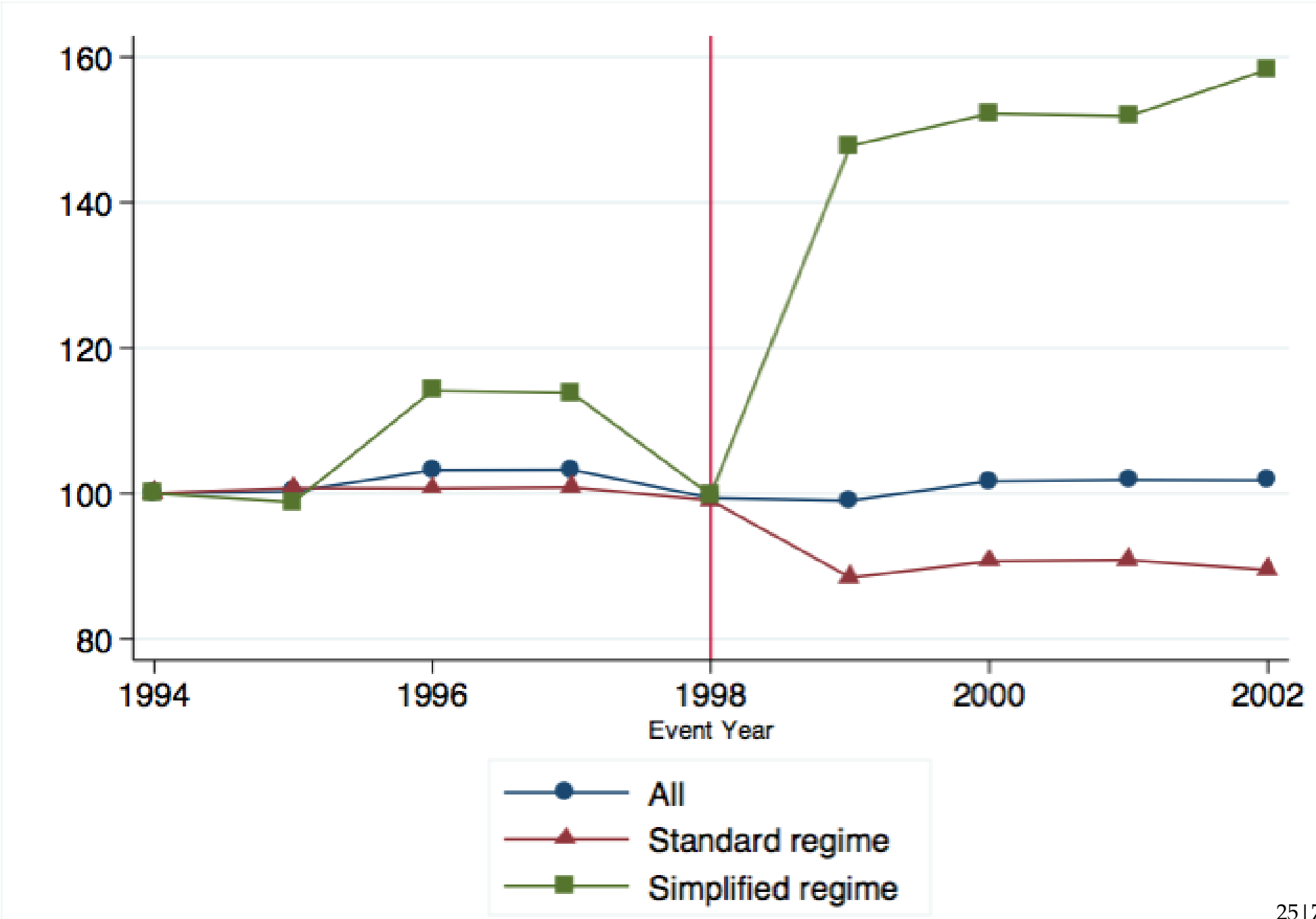
Comparing Different Activities by Income (1994-2012)

	All	Industrial and Commercial (Retail and Service)	Non Commercial
Wage Income	6049	5265	7538
SE Income	30505	22718	45376
Total NS Income	30733	23029	45454
Capital Income	6133	6040	6552
Zero Tax rate	0.13	0.16	0.08
Low Tax rate	0.22	0.26	0.14
Medium Tax rate	0.32	0.34	0.29
High Tax rates	0.33	0.24	0.49
Population (in mill.)	34.7	22.5	12.6

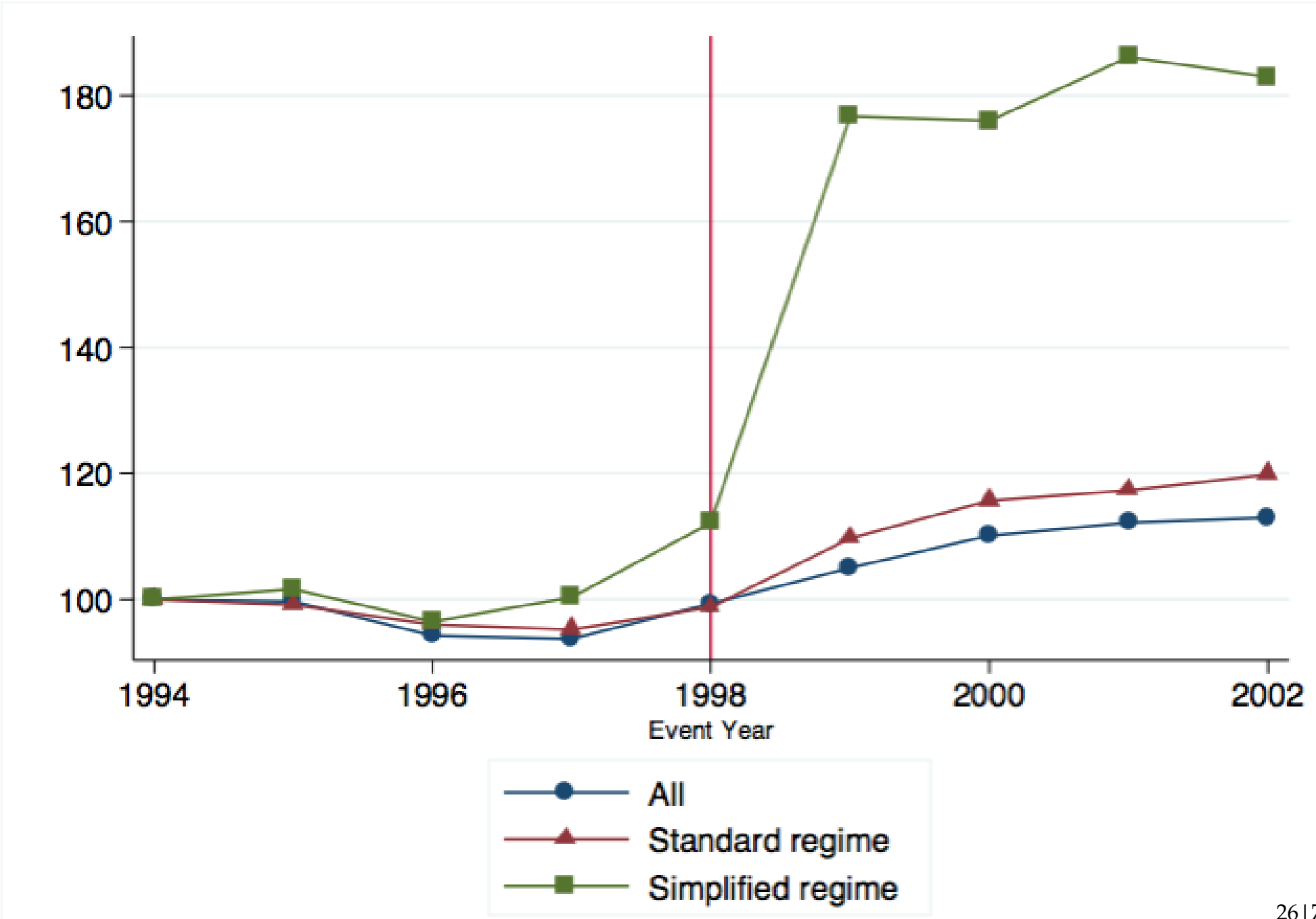
Non-Commercial are much richer (comes from self-employed income).

Two Key Reforms: Expansion vs. Simplification

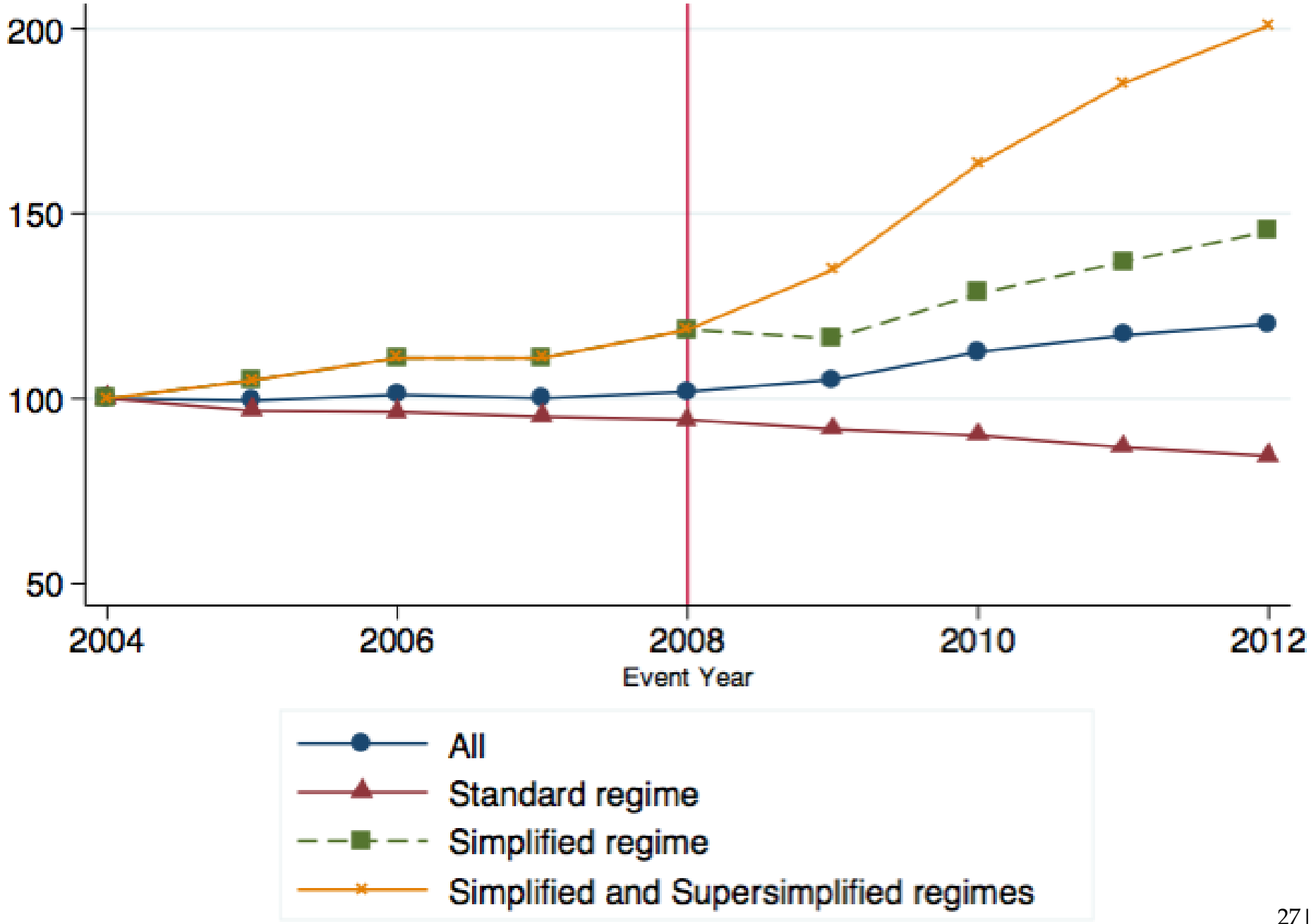
The 1999 reform: Large expansion of thresholds



The 1999 reform: Business Size



The 2008 reform: Creation of the Super-Simplified (SS) Regime



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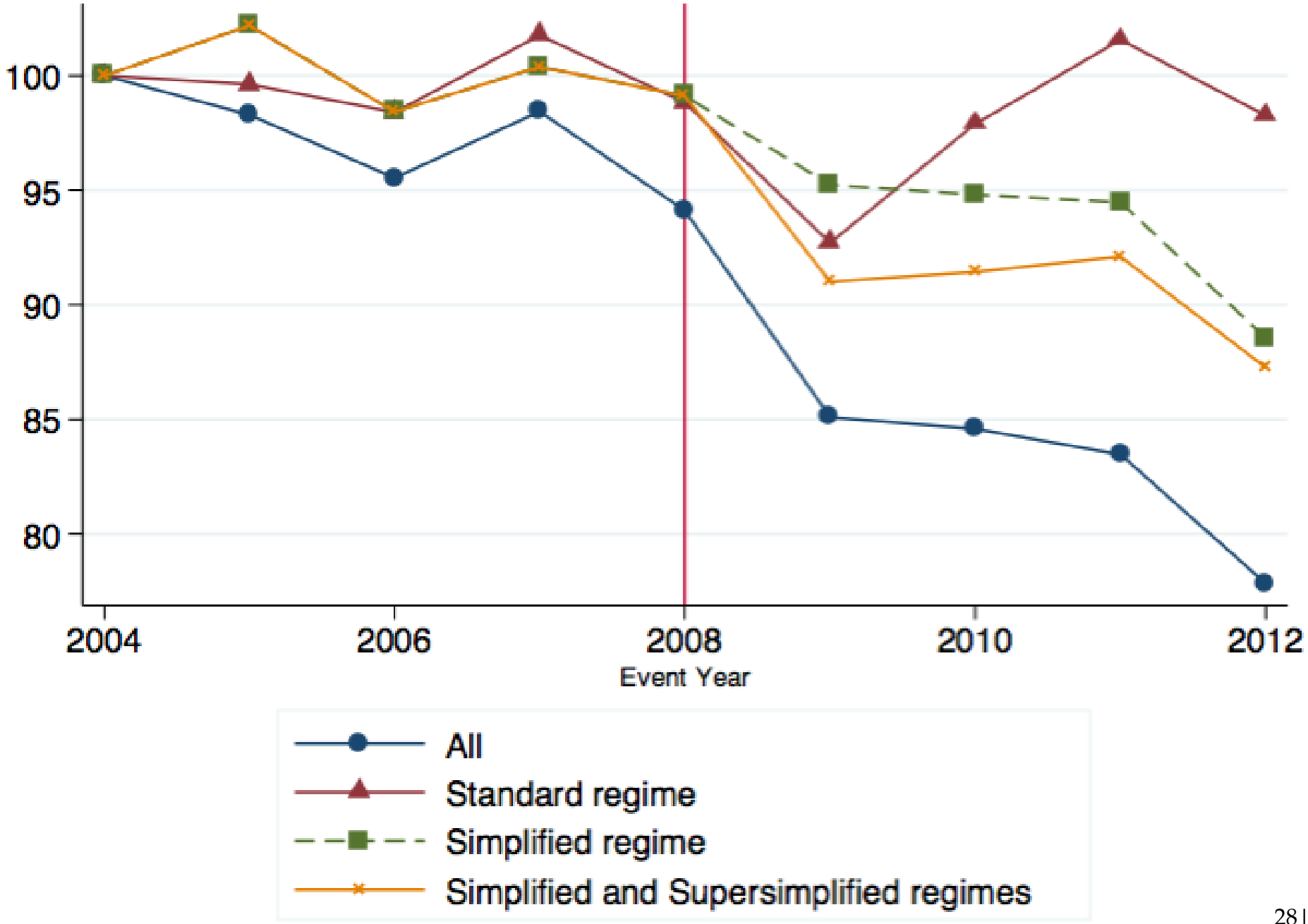


Upward Trend in Simplified Regimes

% of all self-employed in the S or SS regime increases in 1999 and 2008.

Comparison of the Reforms

- Speed:
  - In 1999: immediate effects. Agents already aware of regime.
  - In 2008: gradual adjustment as new regime is progressively understood.
- New entry versus switching regime:
  - In 1999: Switch from standard to simplified, no increase in self-employment (did not change relative costs of self-employment and employment).
  - In 2008: Significant entry into self-employment (reduced costs of being self-employed).
- Size of businesses:
  - In 1999: Entry of larger businesses (threshold relaxed).
  - In 2008: Entry of smaller businesses (simplicity increased).

Regime Choice

Simple Model

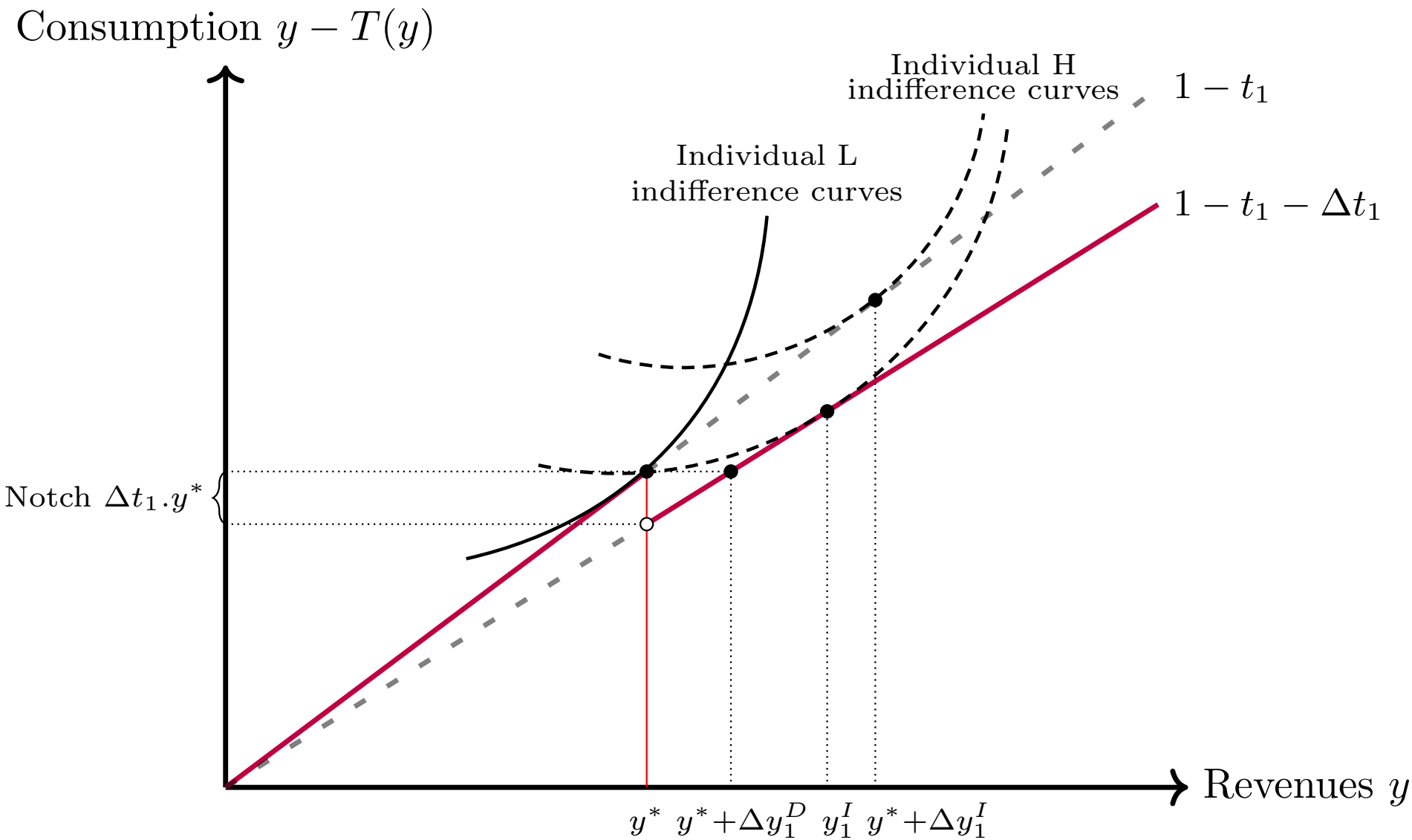
- Productivity type θ
- Disutility of earning income y is $h(y, \theta)$, increasing in y and decreasing in θ.
- Regimes: the simplified (regime "m") the super simplified (regime "f") and standard (regime "r").
- Costs: fraction c_i of gross output y_i in each of the regimes $i = m, f, r$.
- Hassle cost a_i.
- Utility in regime $i = m, f, r$ is thus:

$$u_i = \tilde{c}_i - h(y_i, \theta) - a_i$$

Simple Model (II)

- Policy parameters:
  - Rebate in simplified regime μ.
  - Income tax τ^y. (Recall : can face different τ at same y.)
  - Social security contributions τ^{ss}.
  - Effective rate in regime i is τ_i.
  - Eligibility threshold y^*.
- Standard regime: $\tau_r = \tau^y + \tau^{ss}$ levied on net income $(1 - c_r)y$.
- Simplified regime: $\tau_m = \tau^y + \tau^{ss}$ levied on $(1 - \mu)y$.
- Super simplified: τ_f flat rate, levied on y.

Notch Created by the Eligibility Threshold



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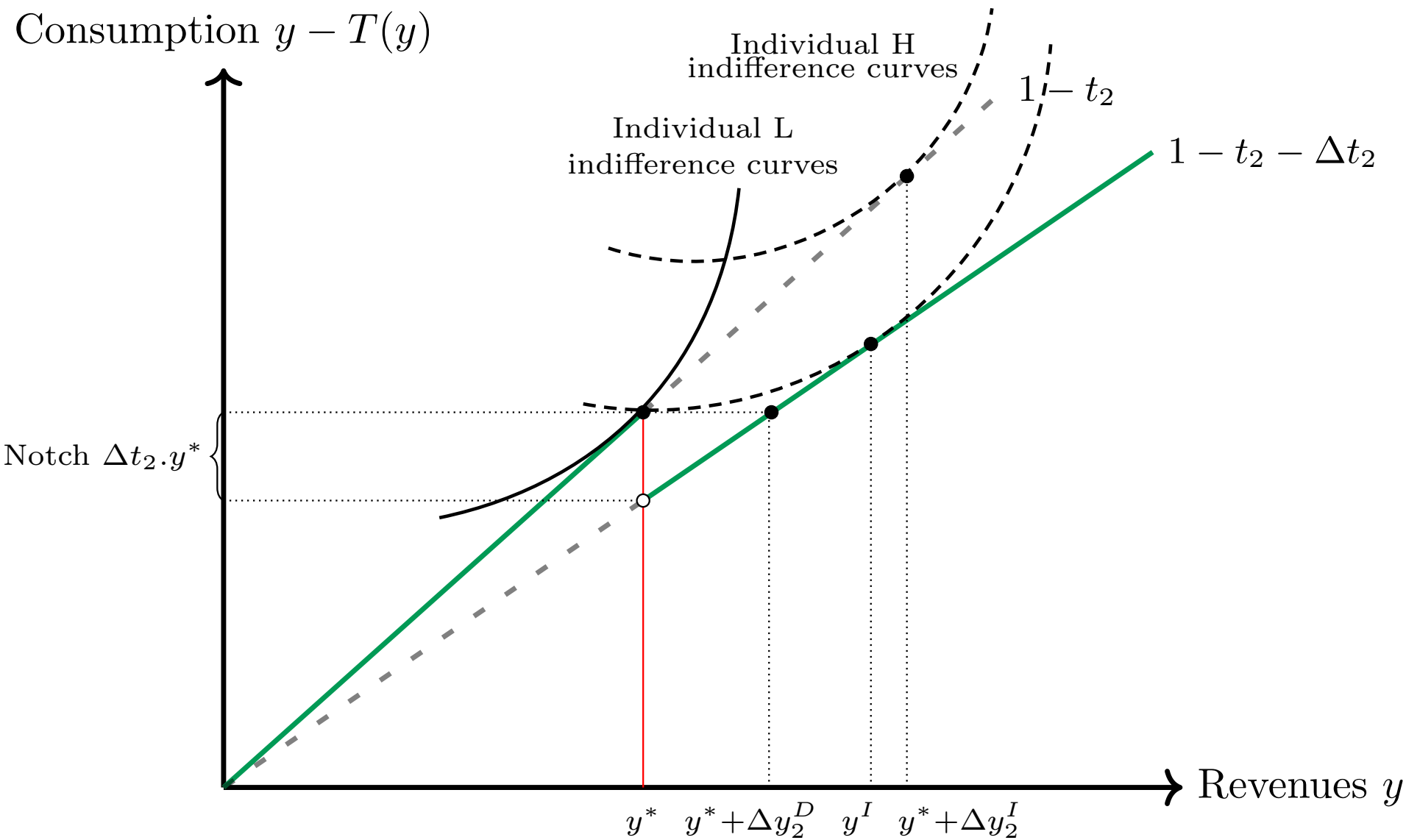
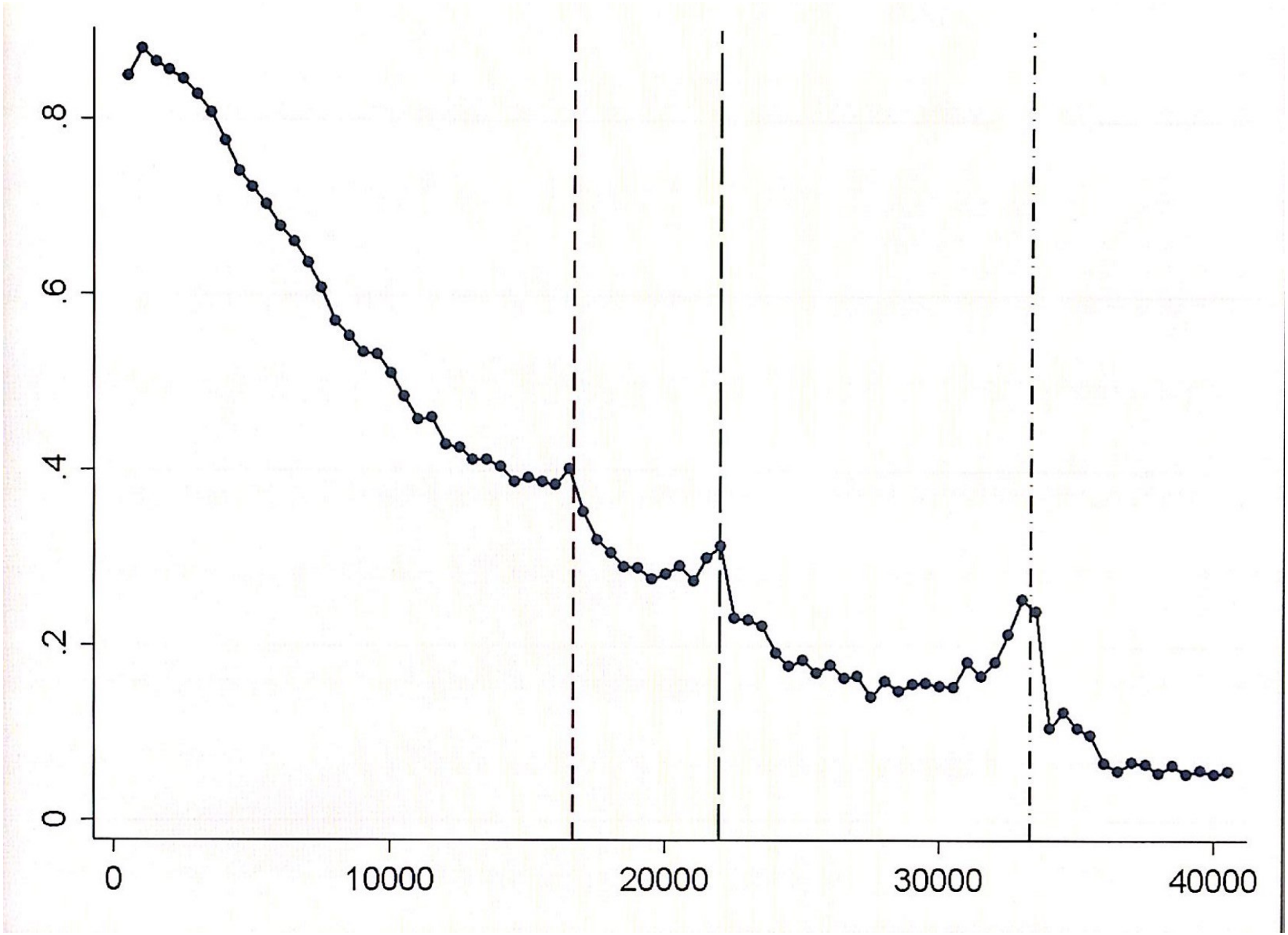


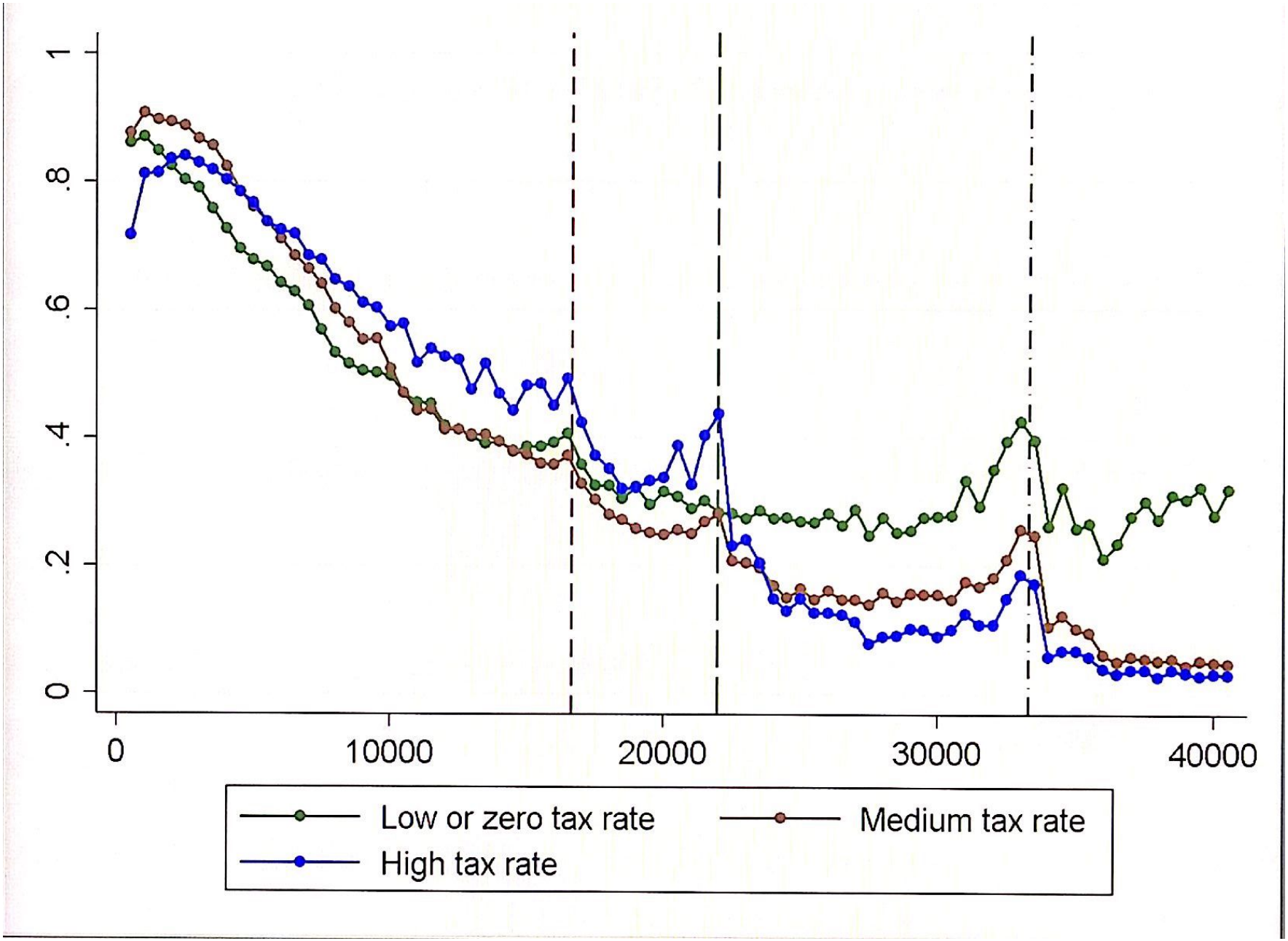
Behavioral Responses in Regime Choice

- **Prediction 1**: Agents who want to be in S or SS regimes should exhibit threshold effects.
  - Thresholds irrelevant for those who prefer standard regime (cost structure, income, ..).
- **Prediction 2**: Threshold effects in regime choice should be stronger for high tax brackets agents.
  - Benefit from optimizing regime (= tax base) increases in τ.
- **Prediction 3**: Post 2008, conditional on not wanting to be in standard regime, should want to be in SS regime.
  - Regardless of costs, choice between S and SS depends only on $\tau_f - (1-\mu)\tau_m - \frac{1}{y}(a_m - a_f) < 0$ for all agents.
  - Expect less than full take up since some non eligible professions: Notaries, medical..

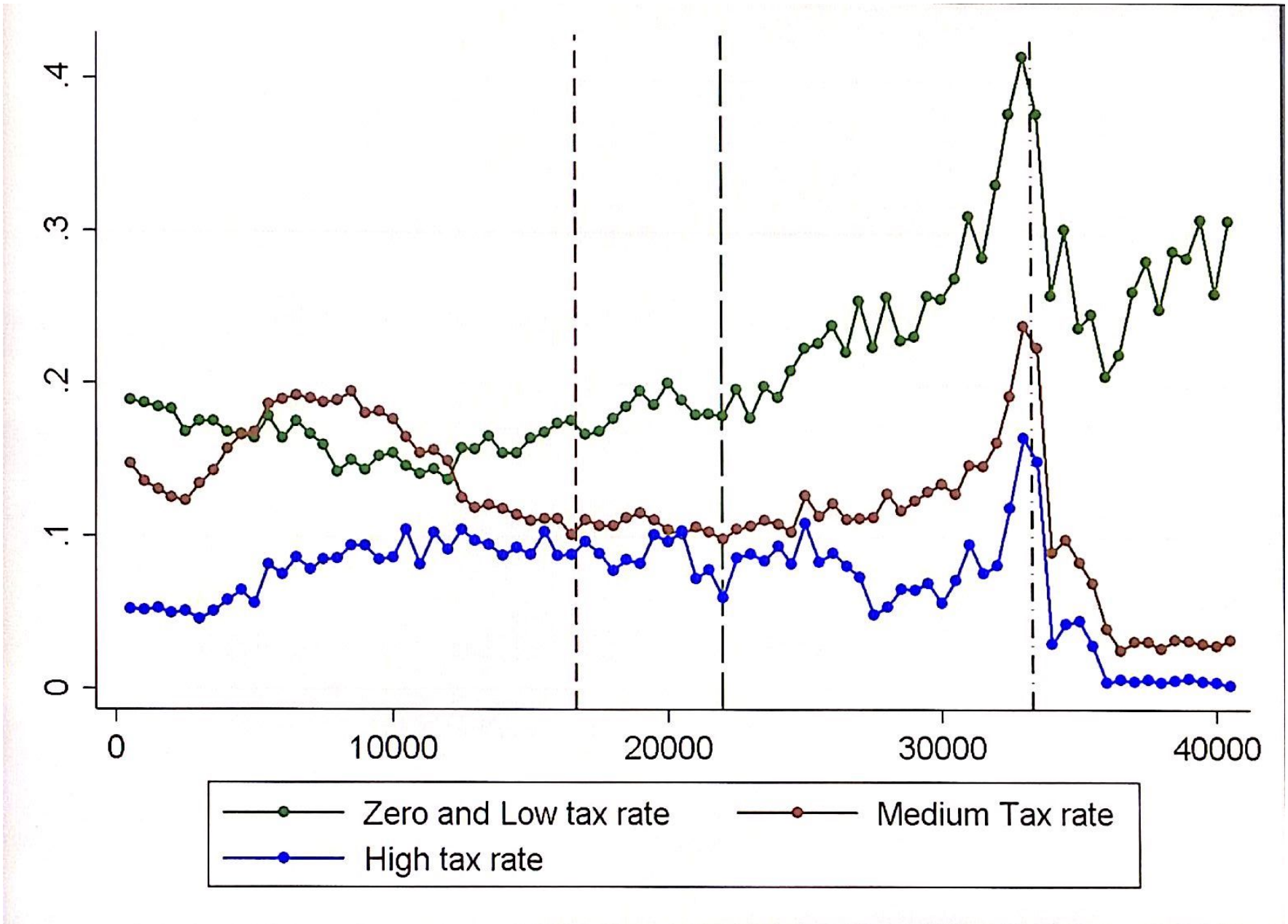
% of All Self-Employed in Any Simplified Regime



... By Tax Bracket



% of All Self-Employed in the Super Simplified Regime

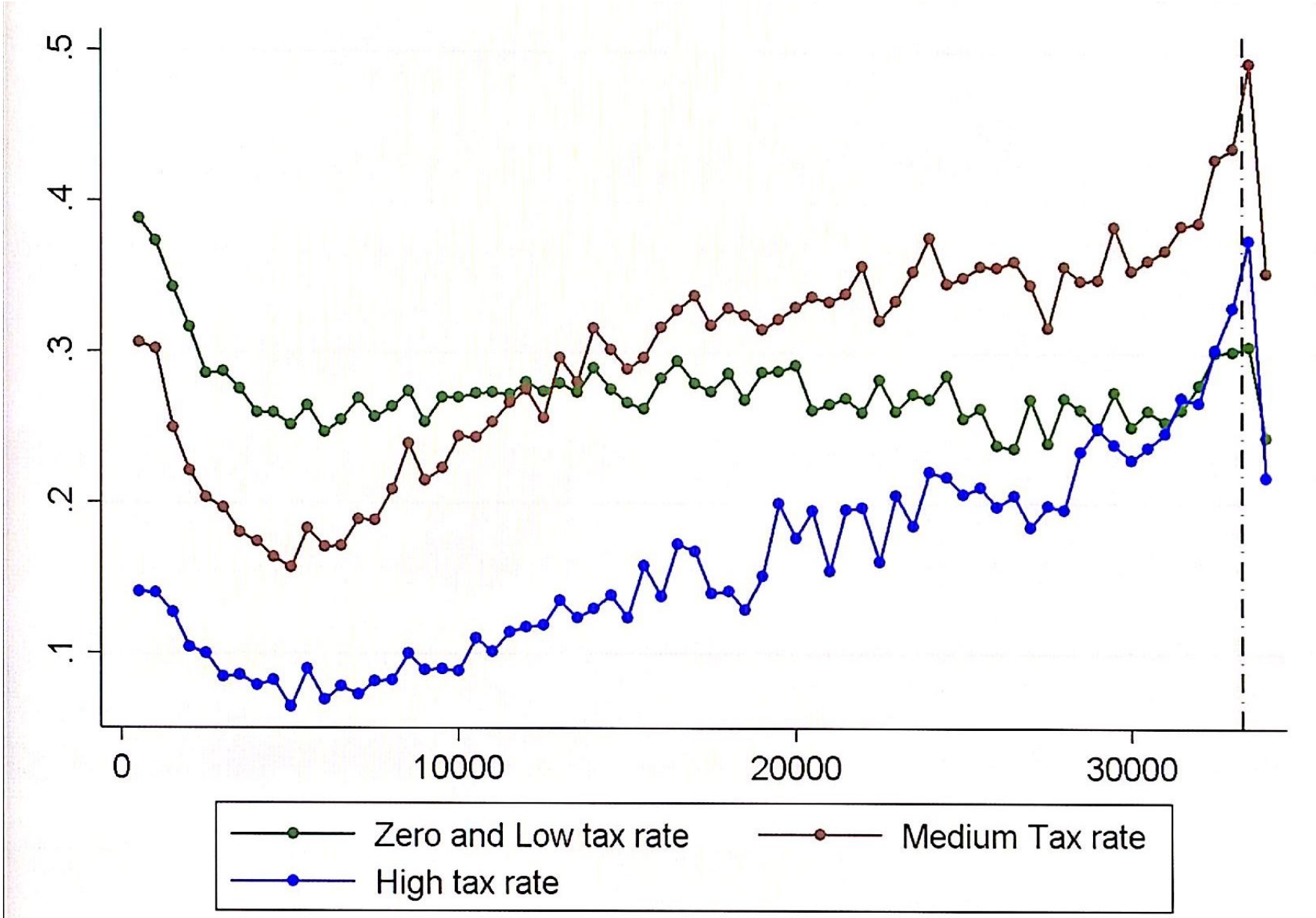


Not All Eligible Agents Choose the Super Simplified..

% of All Simplified in the Super Simplified. There should be no threshold effect here.. those who understand/can adjust stay at threshold?

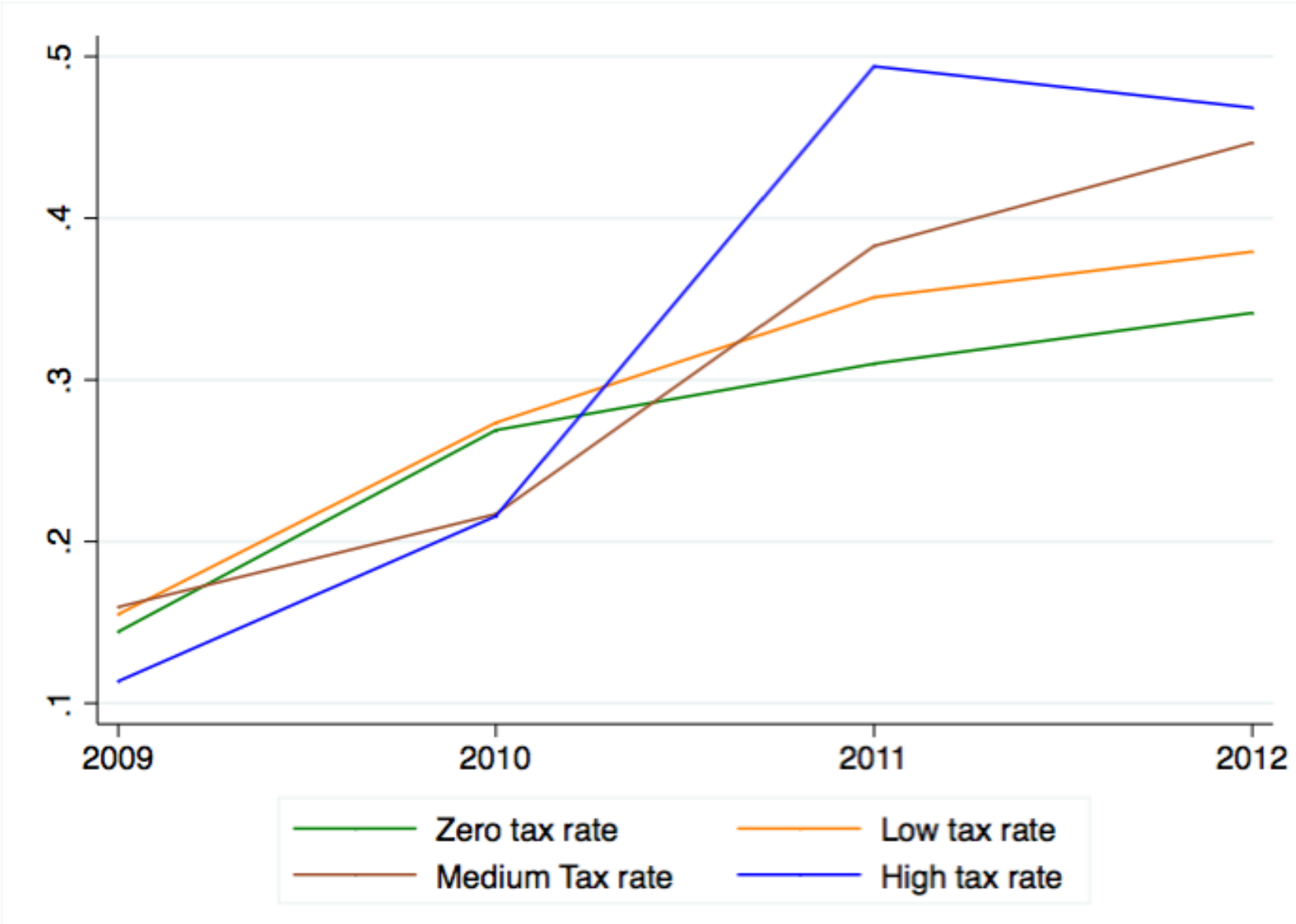
... High Tax Brackets Agents Respond More

% of All Simplified in the Super Simplified by tax bracket. Loss for higher tax brackets larger.

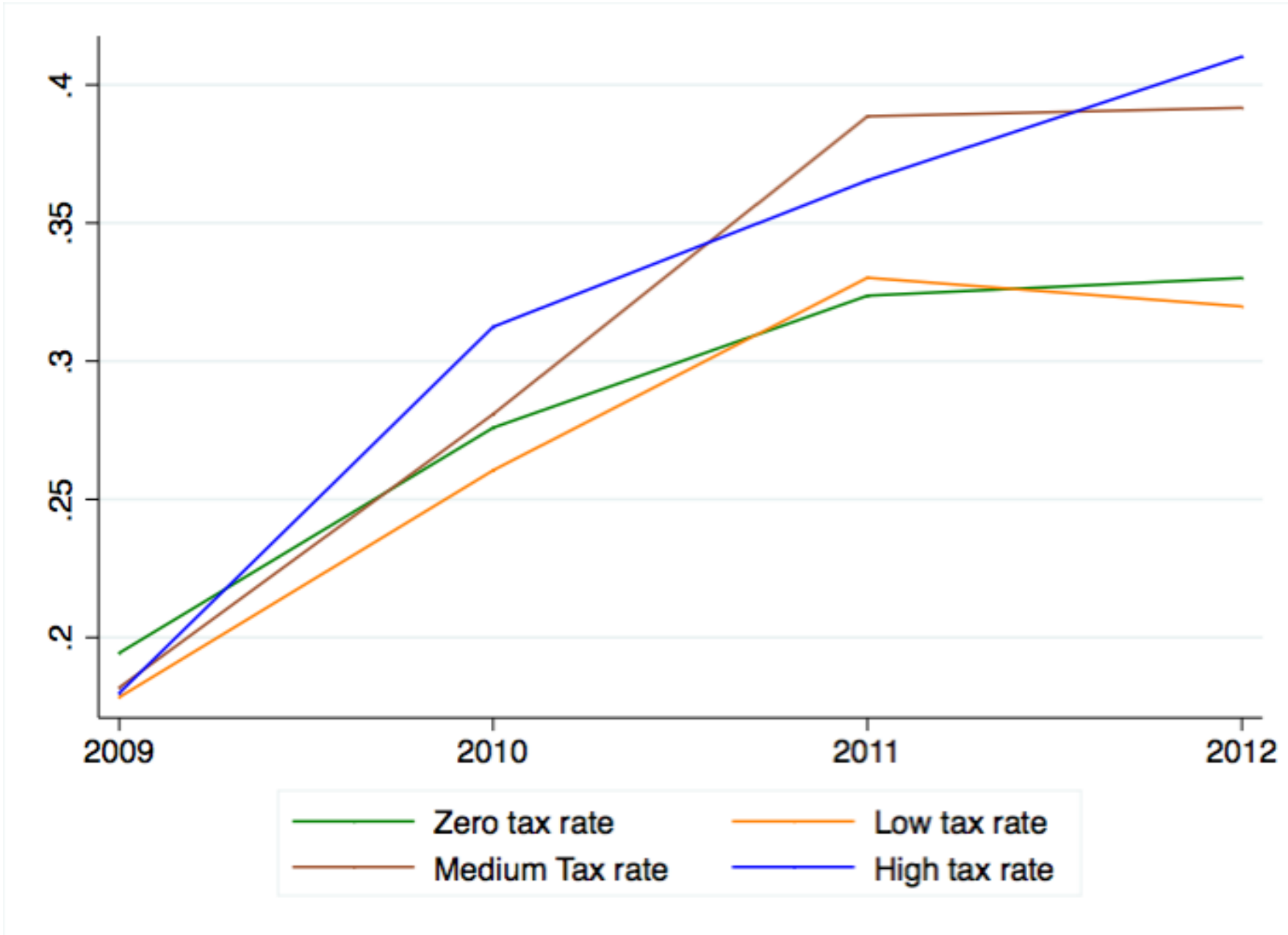


Inertia? Progressive Learning? Adjustment?

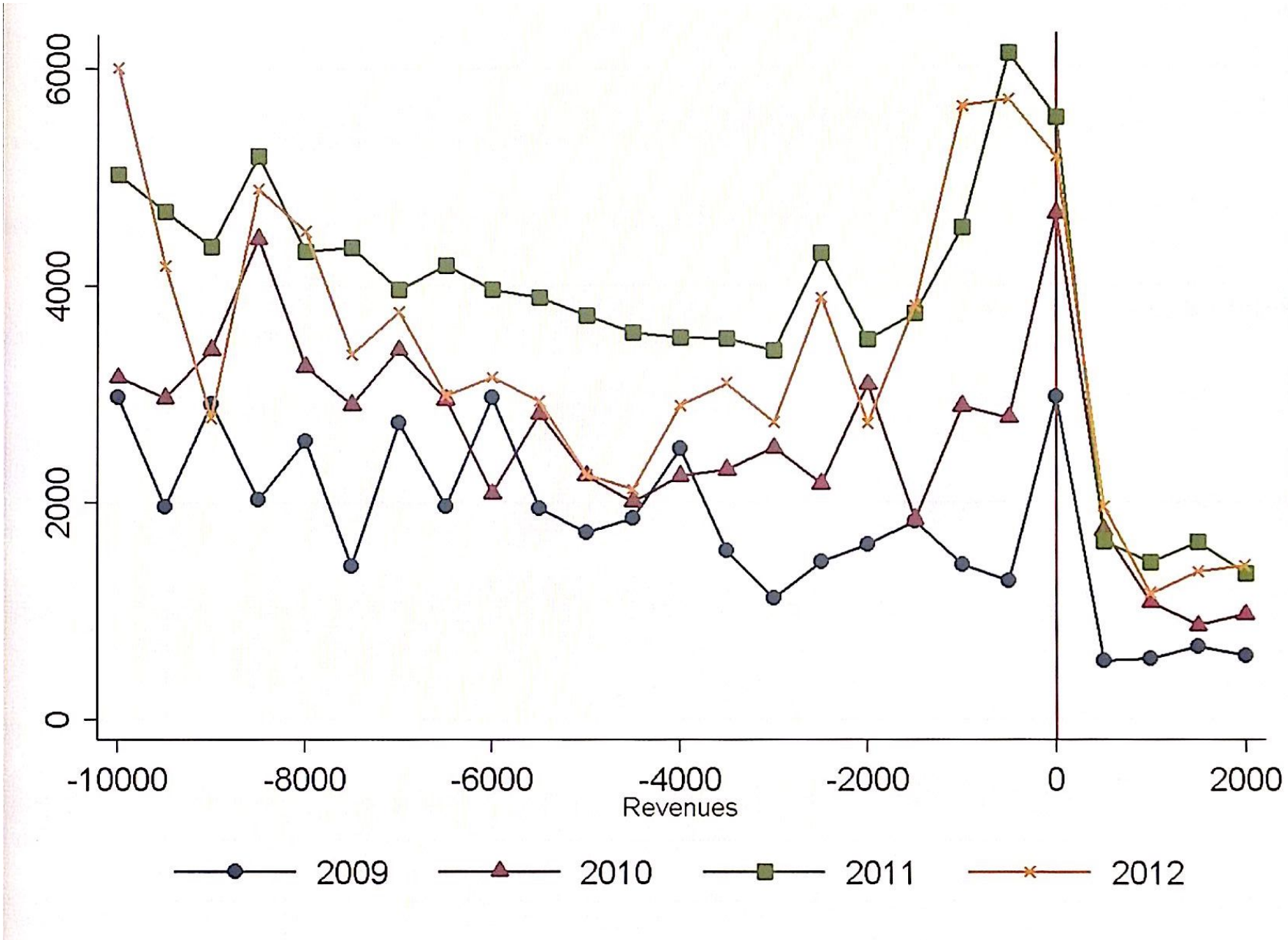
% choosing SS regime over S Regime by tax brackets in I&C. Increase over time, and mostly for high tax brackets (biggest tax loss and maybe highest understanding).



Non Commercial: % choosing SS regime over S Regime by tax brackets in

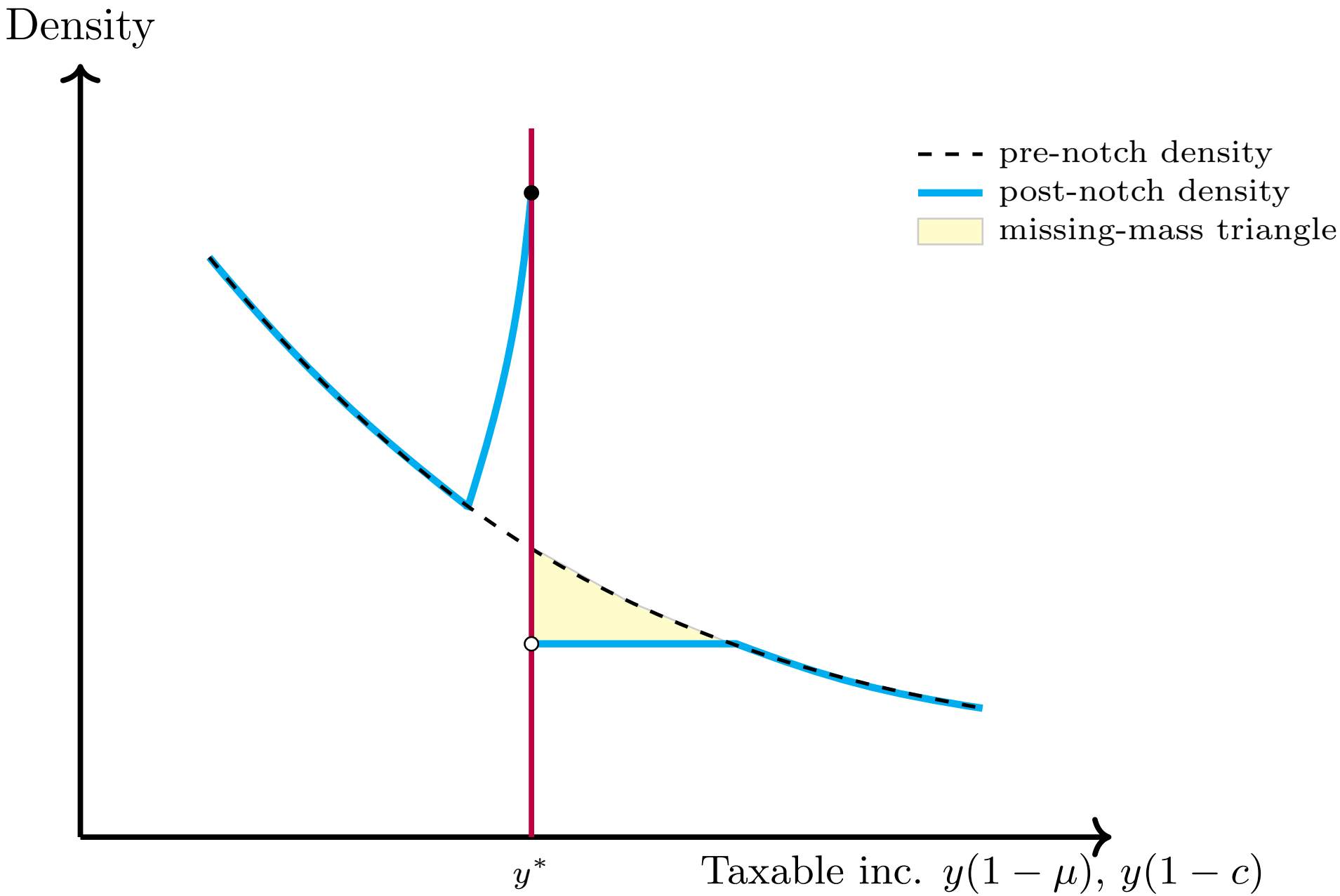


More and More Bunching of Income After Start of SS Regime

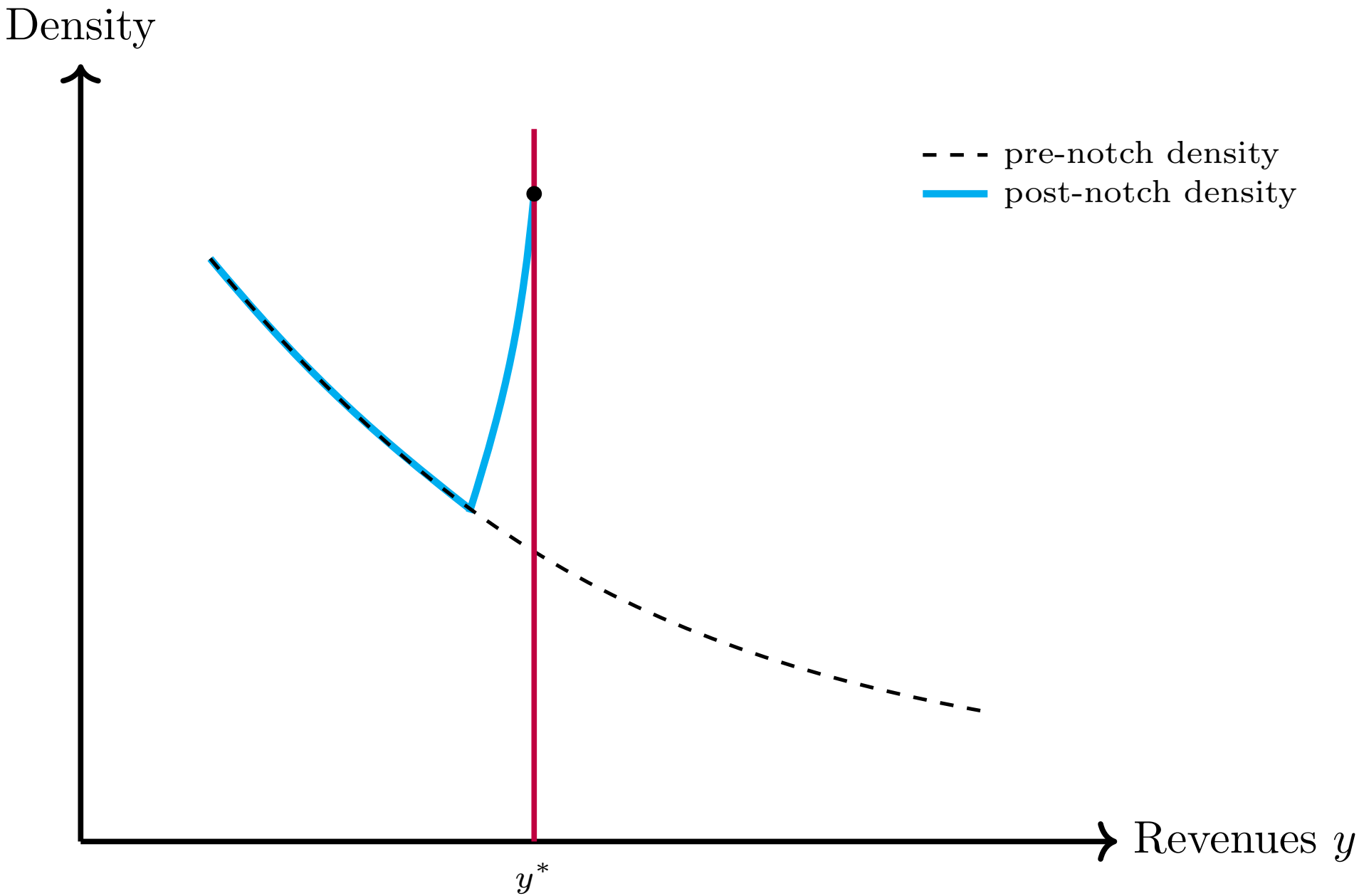


Income Responses to the Notch

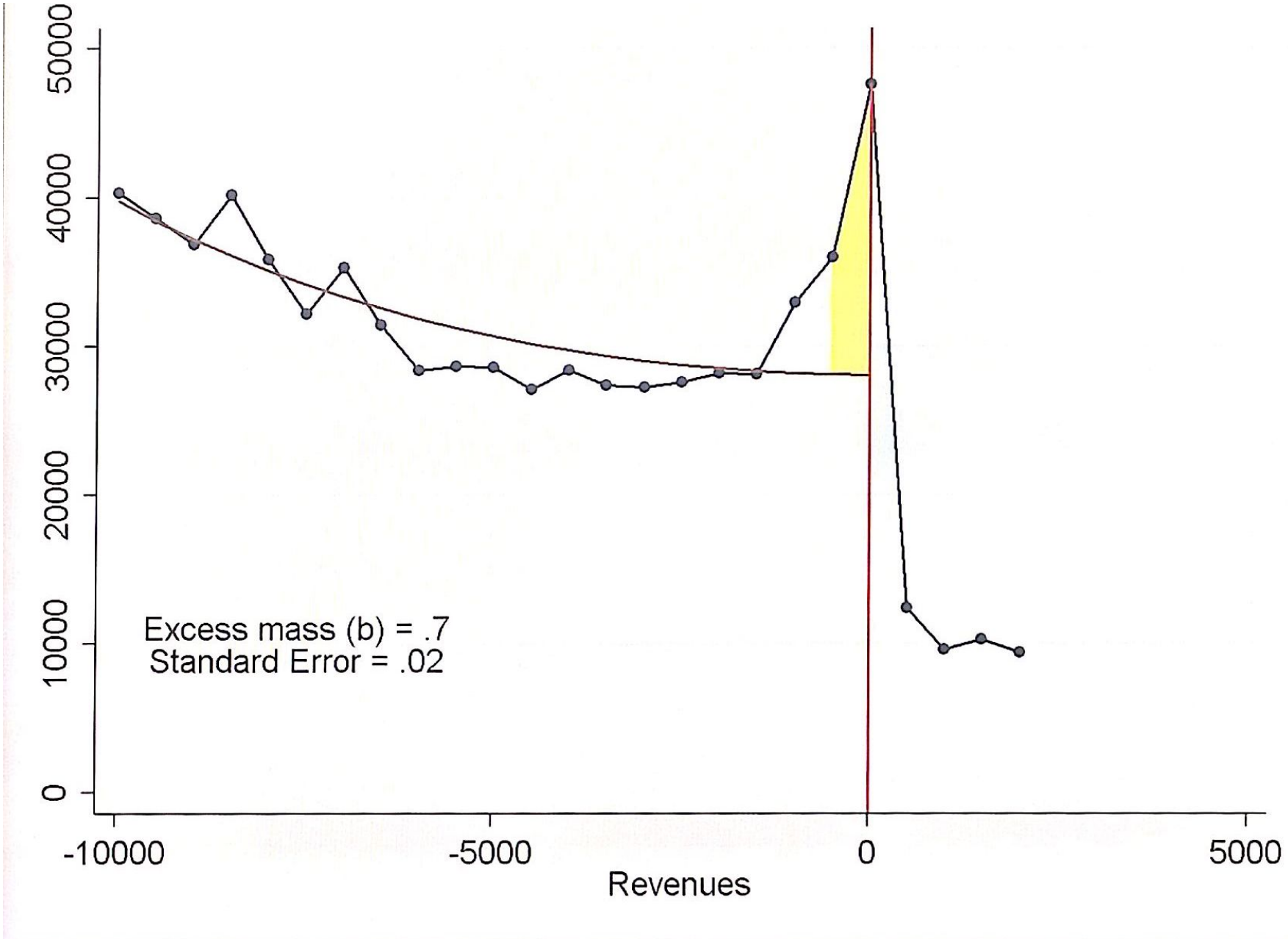
Standard Excess Mass Method



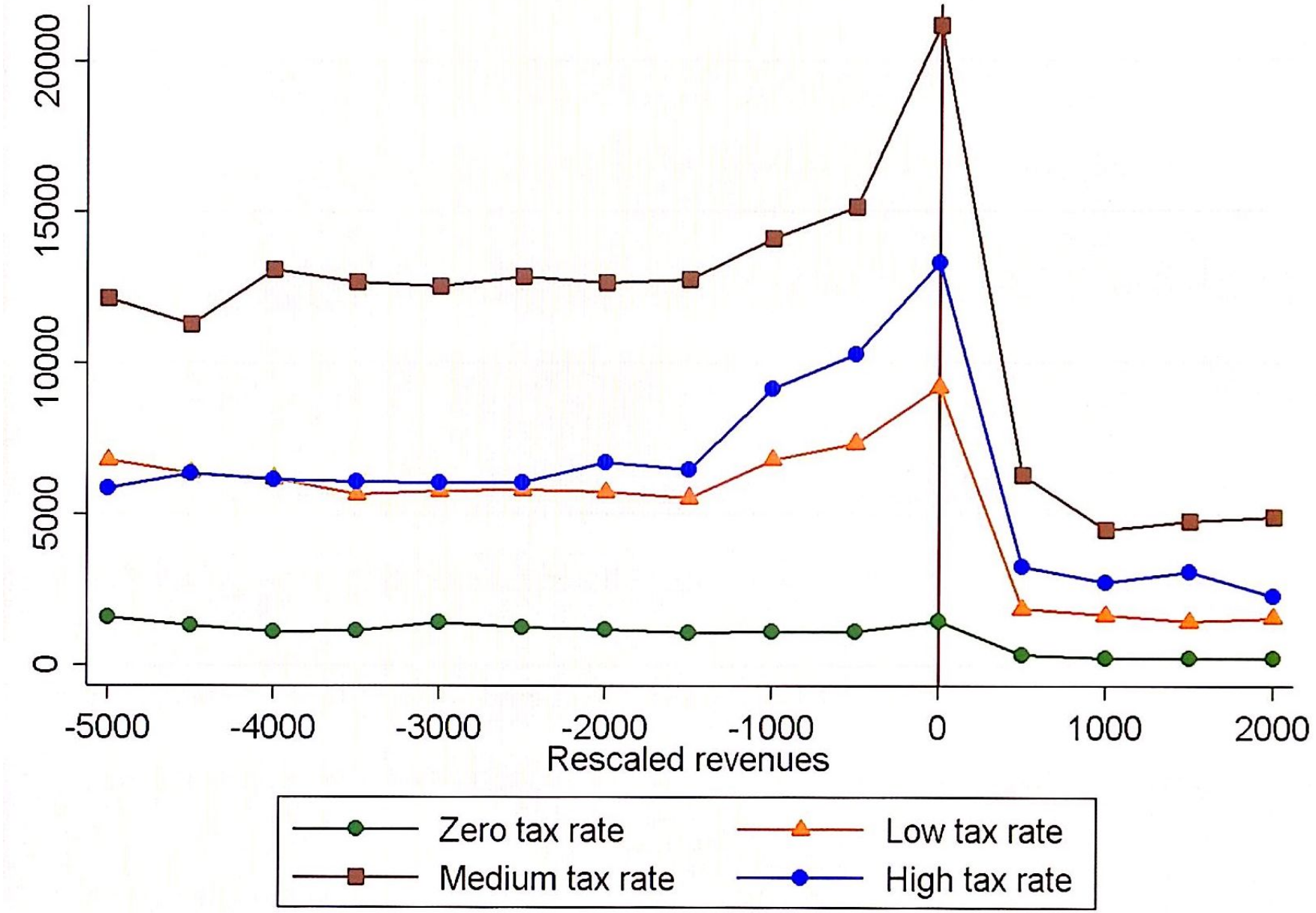
"Left-side" Excess Mass Method



Left-side Mass at Eligibility Thresholds 1999-2012



... By Tax Bracket

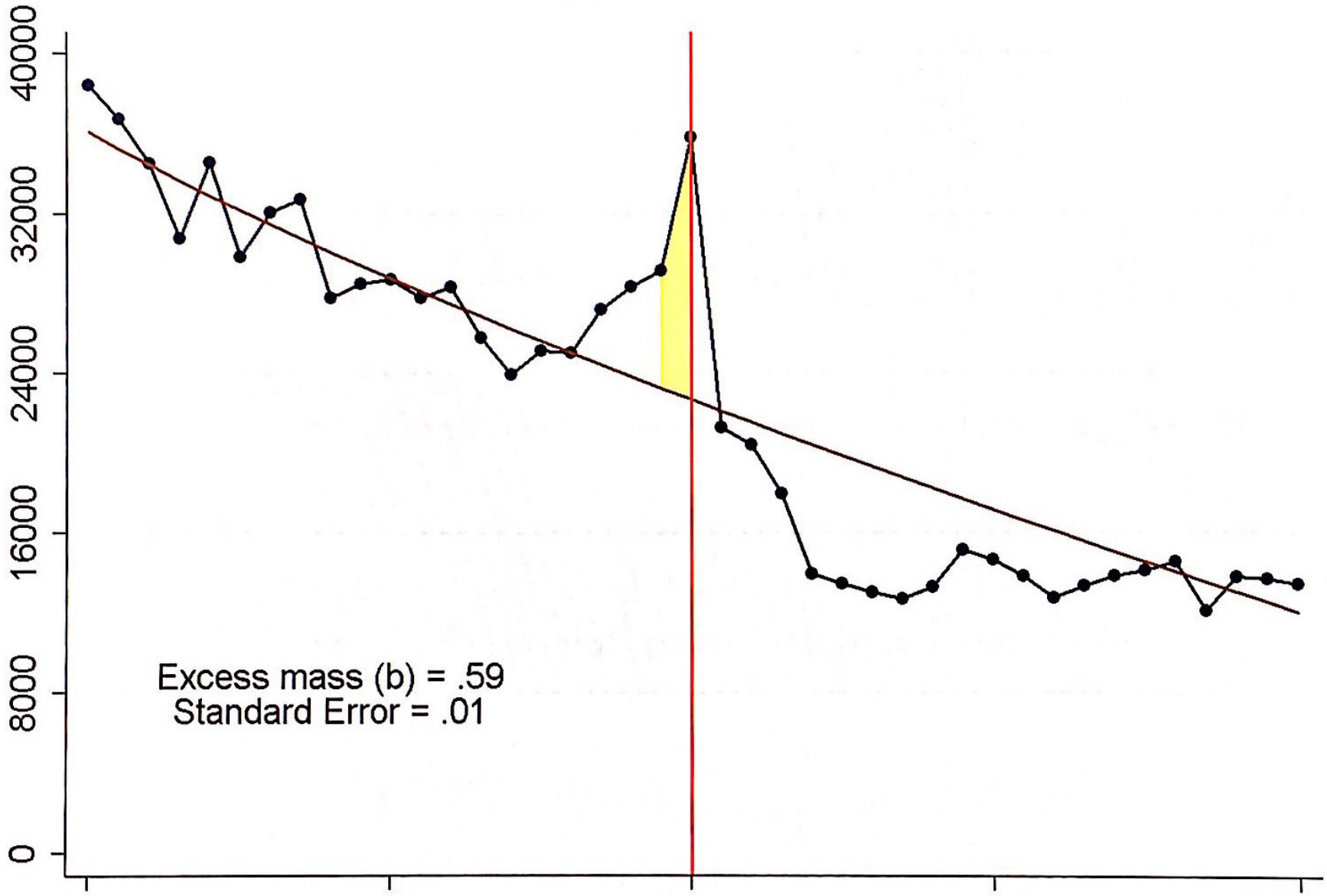


Excess Mass Estimates by Tax Bracket

Tax bracket	Av. Income Tax	Excess mass b	Standard error $se(b)$
Zero	0%	0.37	0.11
Low	$\approx$ 2%	0.76	0.05
Medium	$\approx$ 6.5%	0.77	0.03
High	$\approx$ 15%	1.24	0.05

Note: add social security contributions $\approx$ 40%, but vary.

Standard Excess Mass in Taxable Income



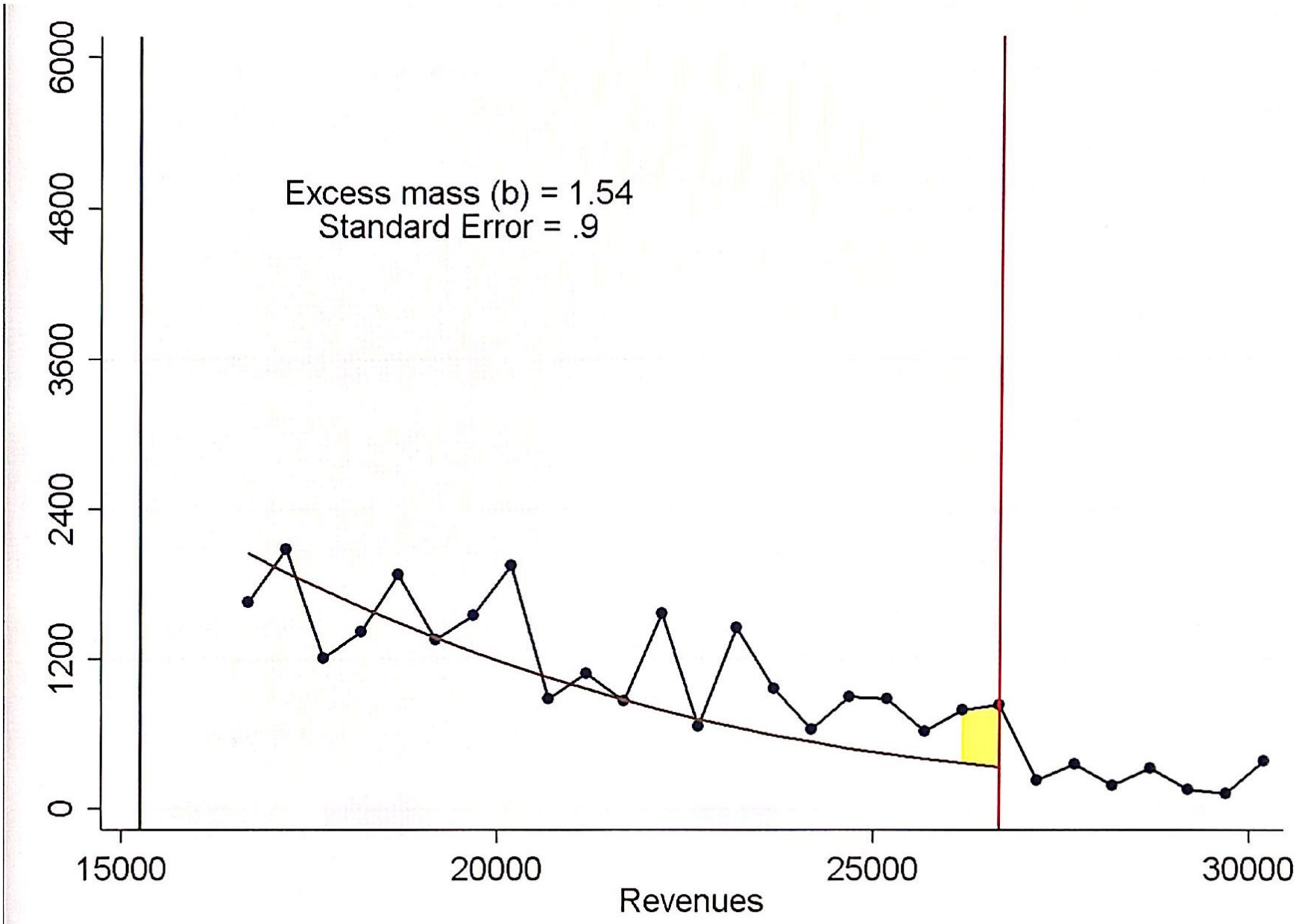
Dynamic Adjustments

Dynamic Adjustments

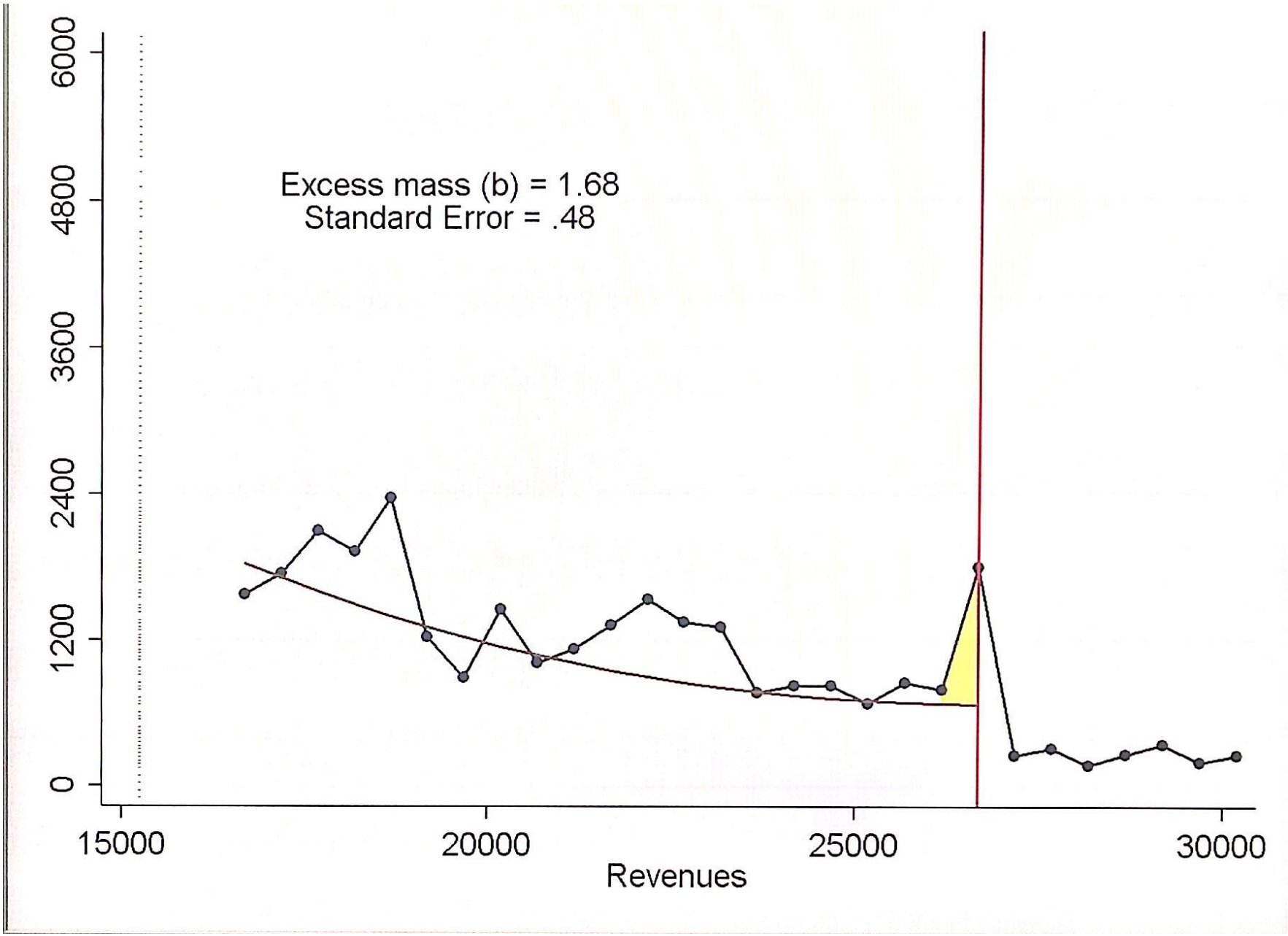
- Thresholds have changed a lot over time.
  - Sometimes by a little, sometimes by a lot.
- Track how excess mass has moved over time.

1999 (Post-Reform, Large Threshold Expansion)

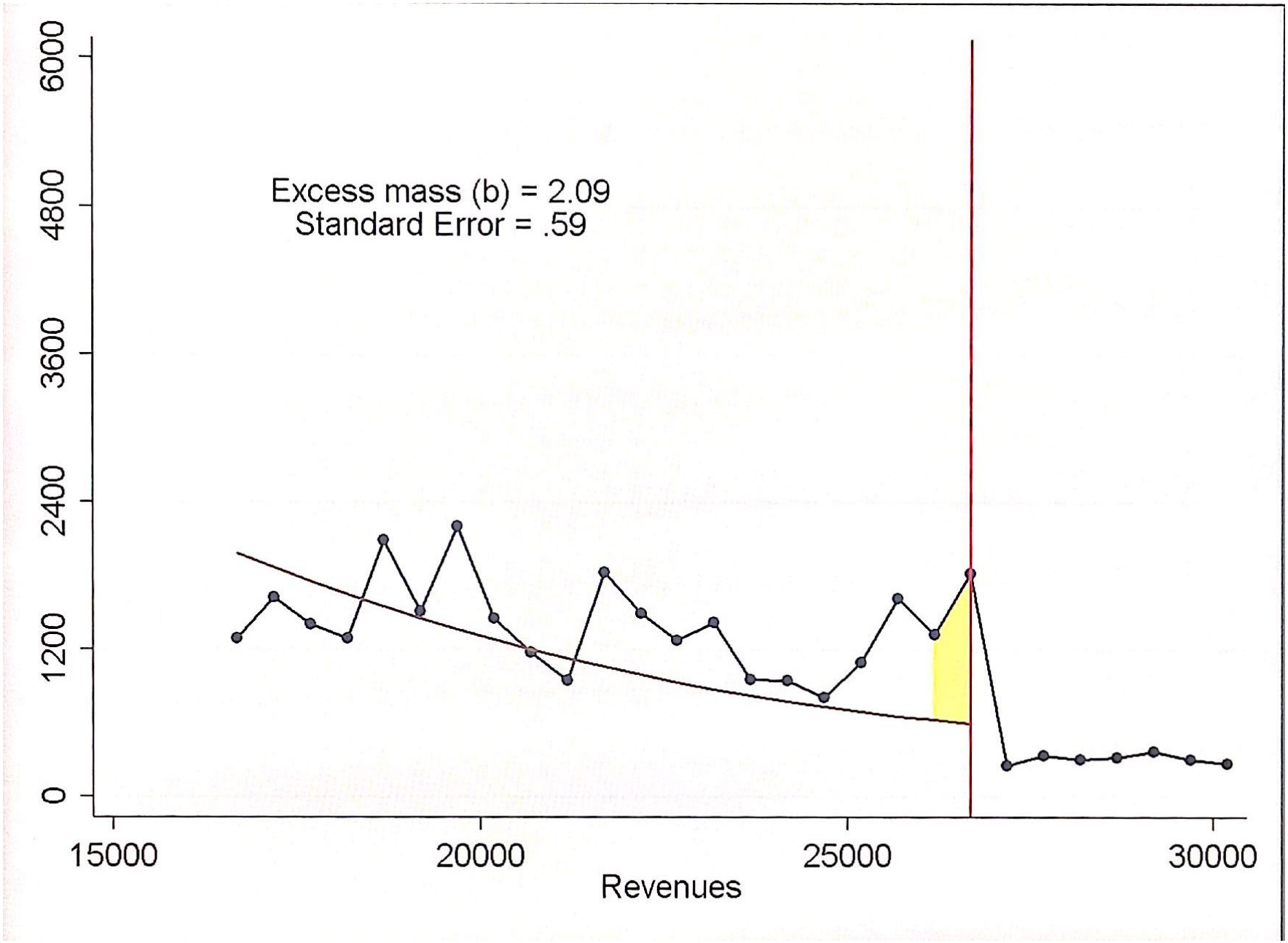
Solid line: year $t-1$ threshold. Dotted: year $t-2$ threshold.



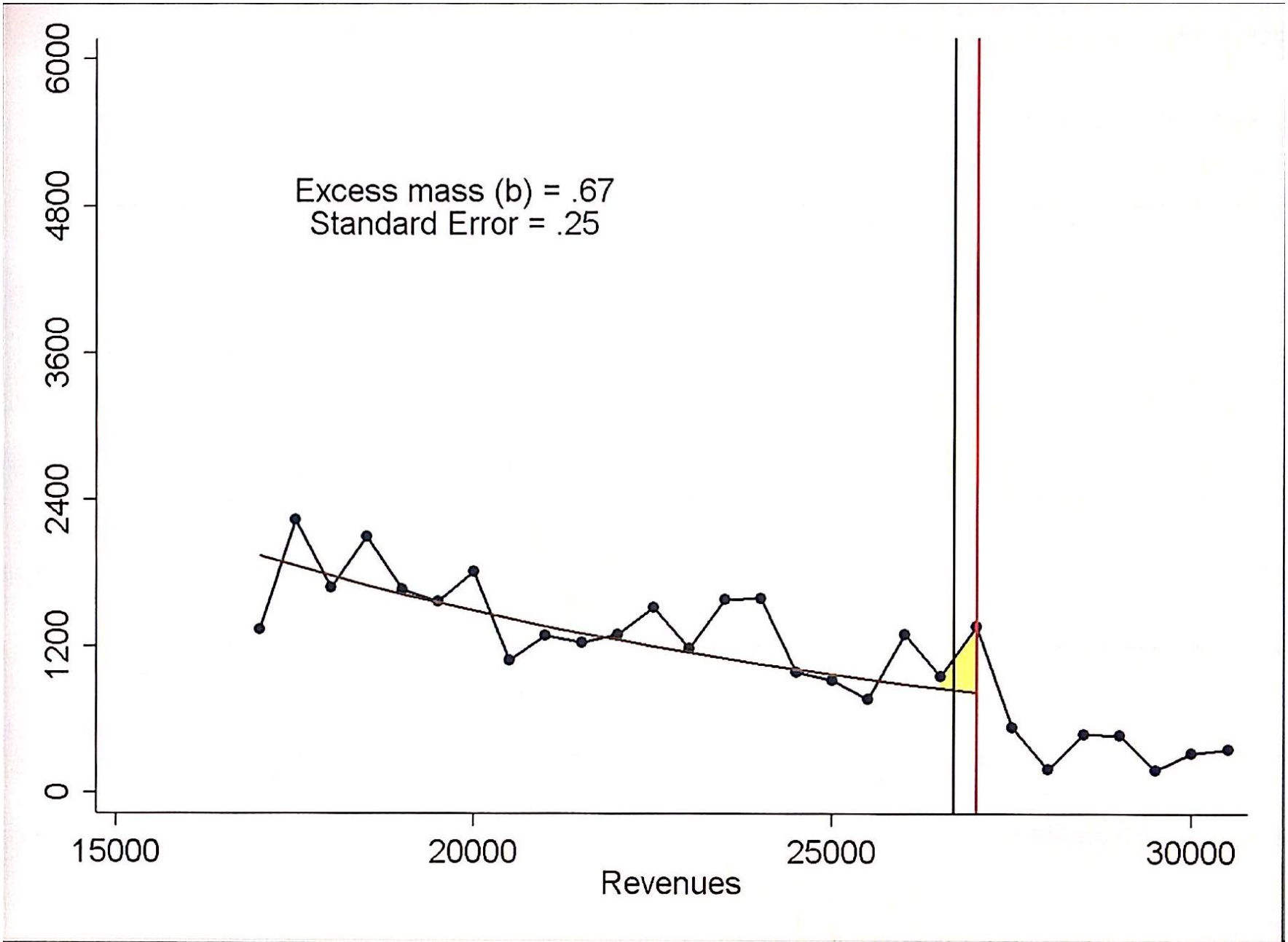
2000


Excess mass (b) = 1.68
Standard Error = .48
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

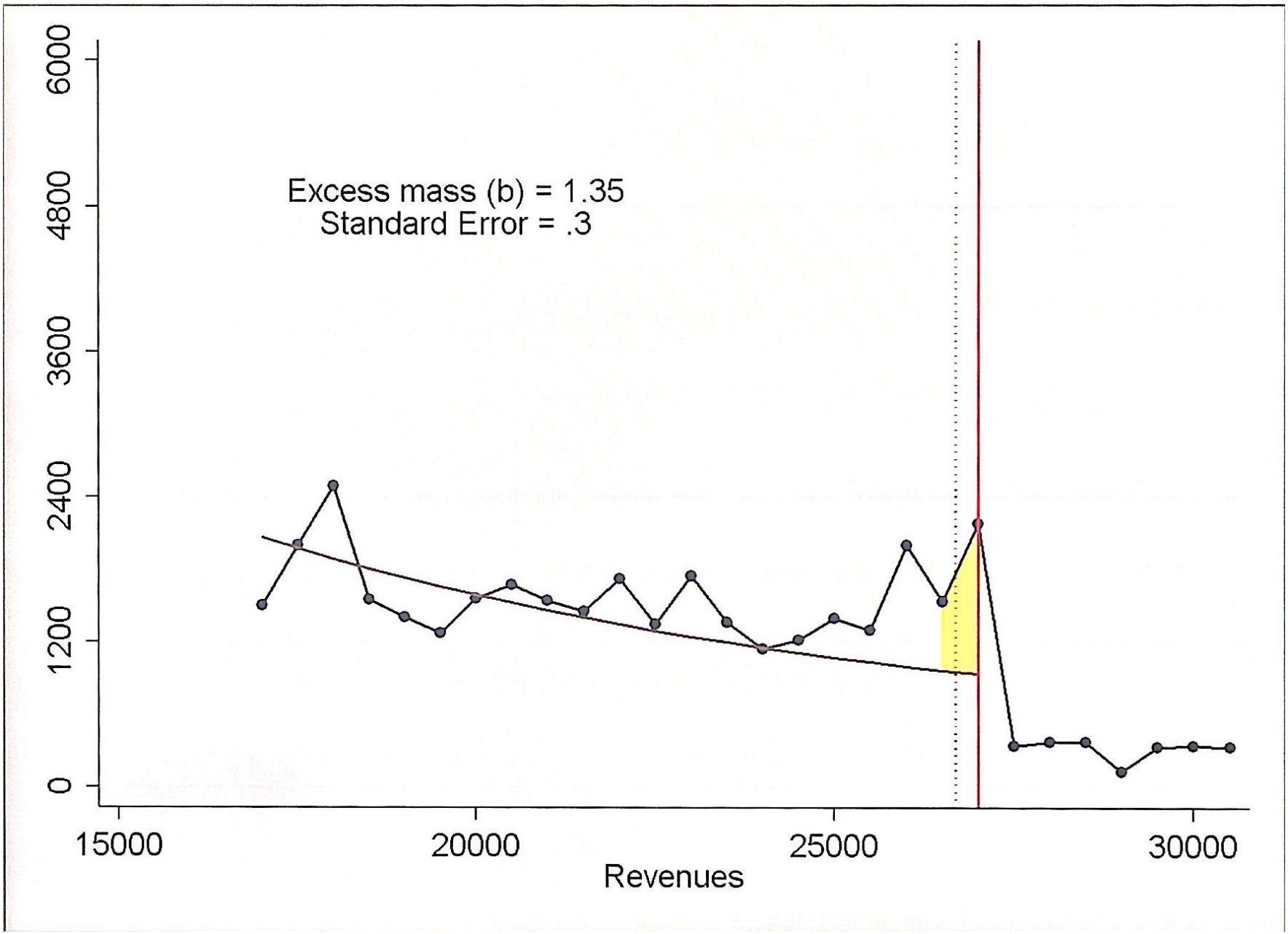
2001


Excess mass (b) = 2.09
Standard Error = .59
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

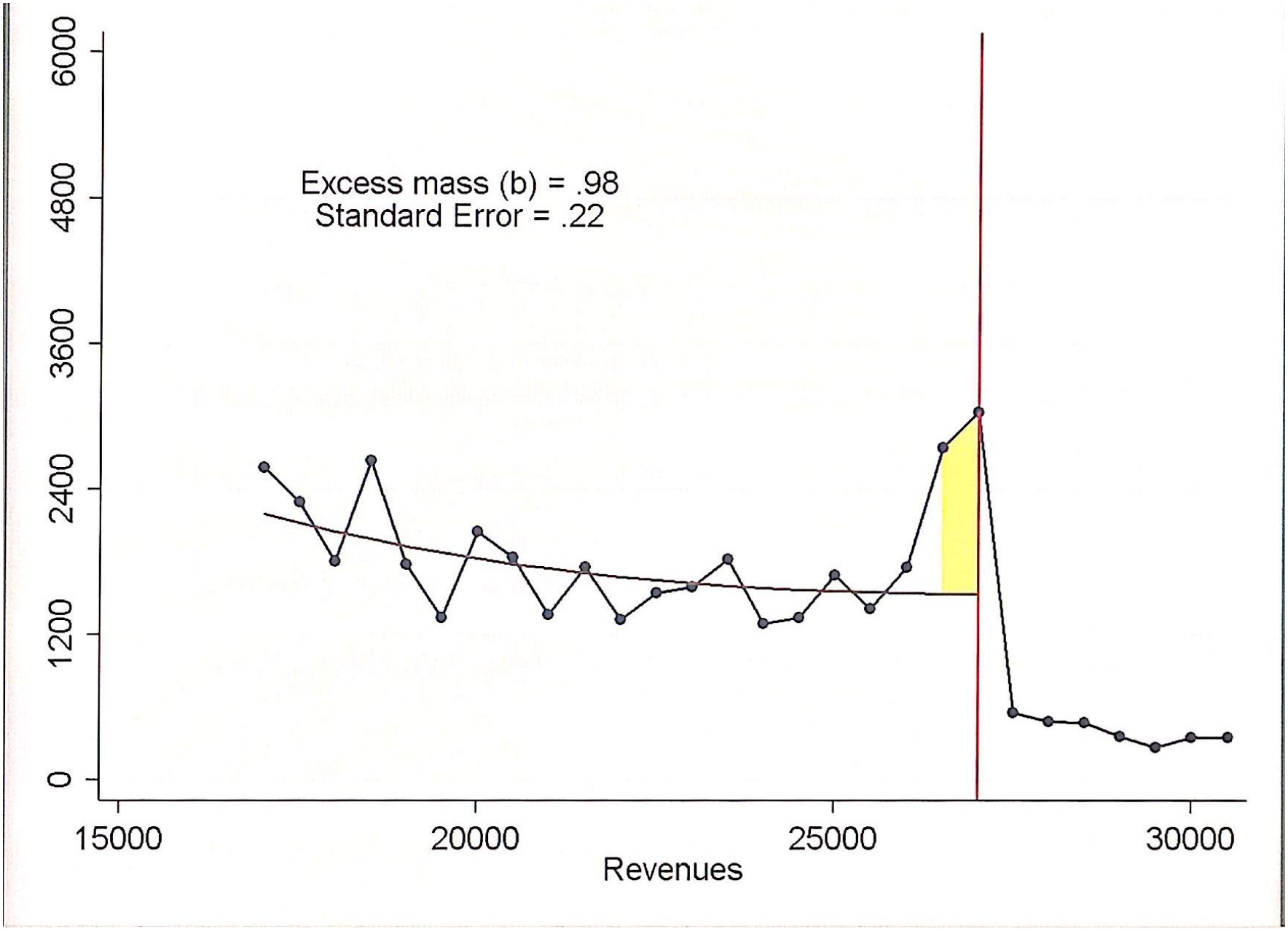
2002 (Small Threshold Change)



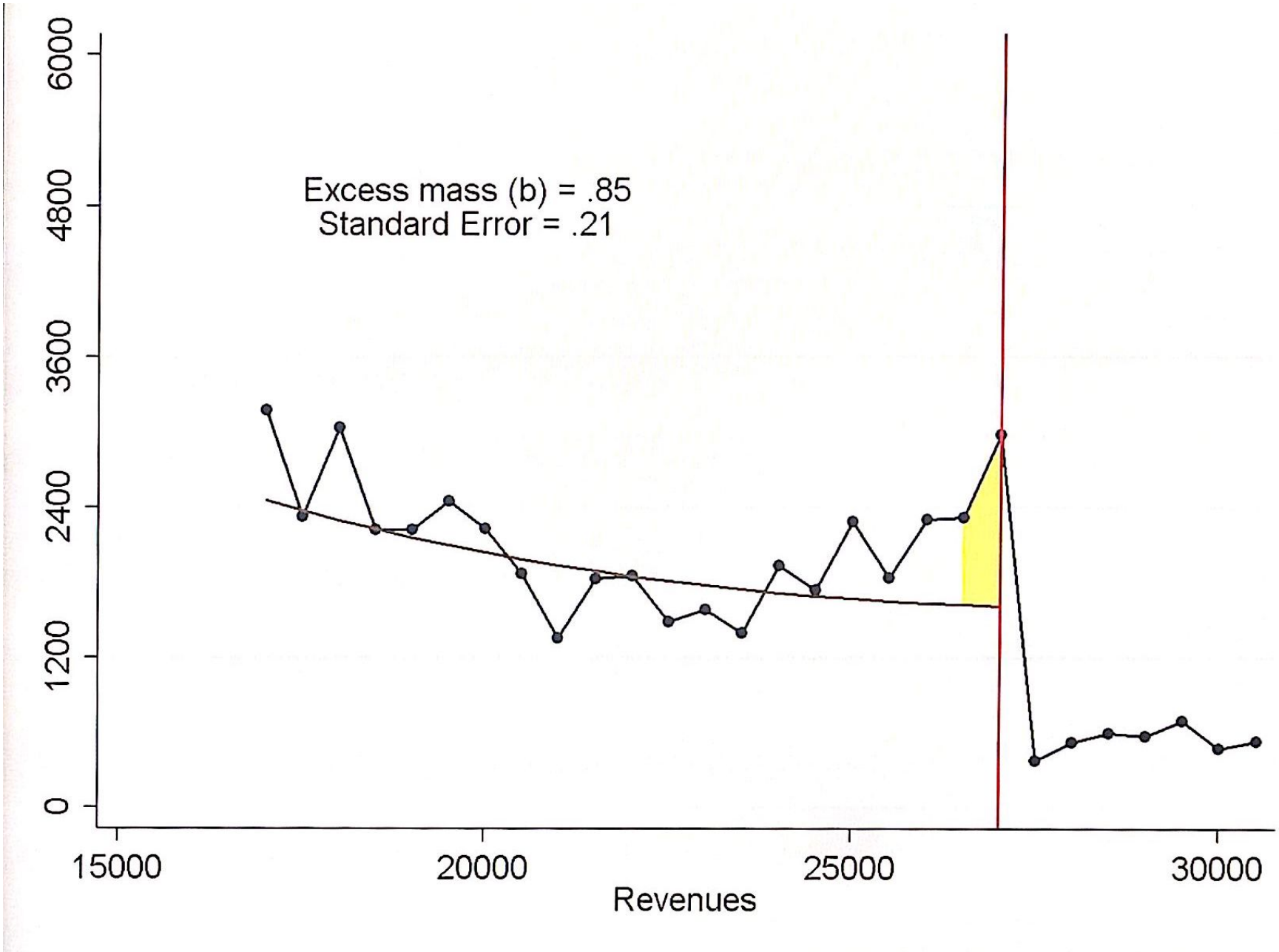
2003


Excess mass (b) = 1.35
Standard Error = .3
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

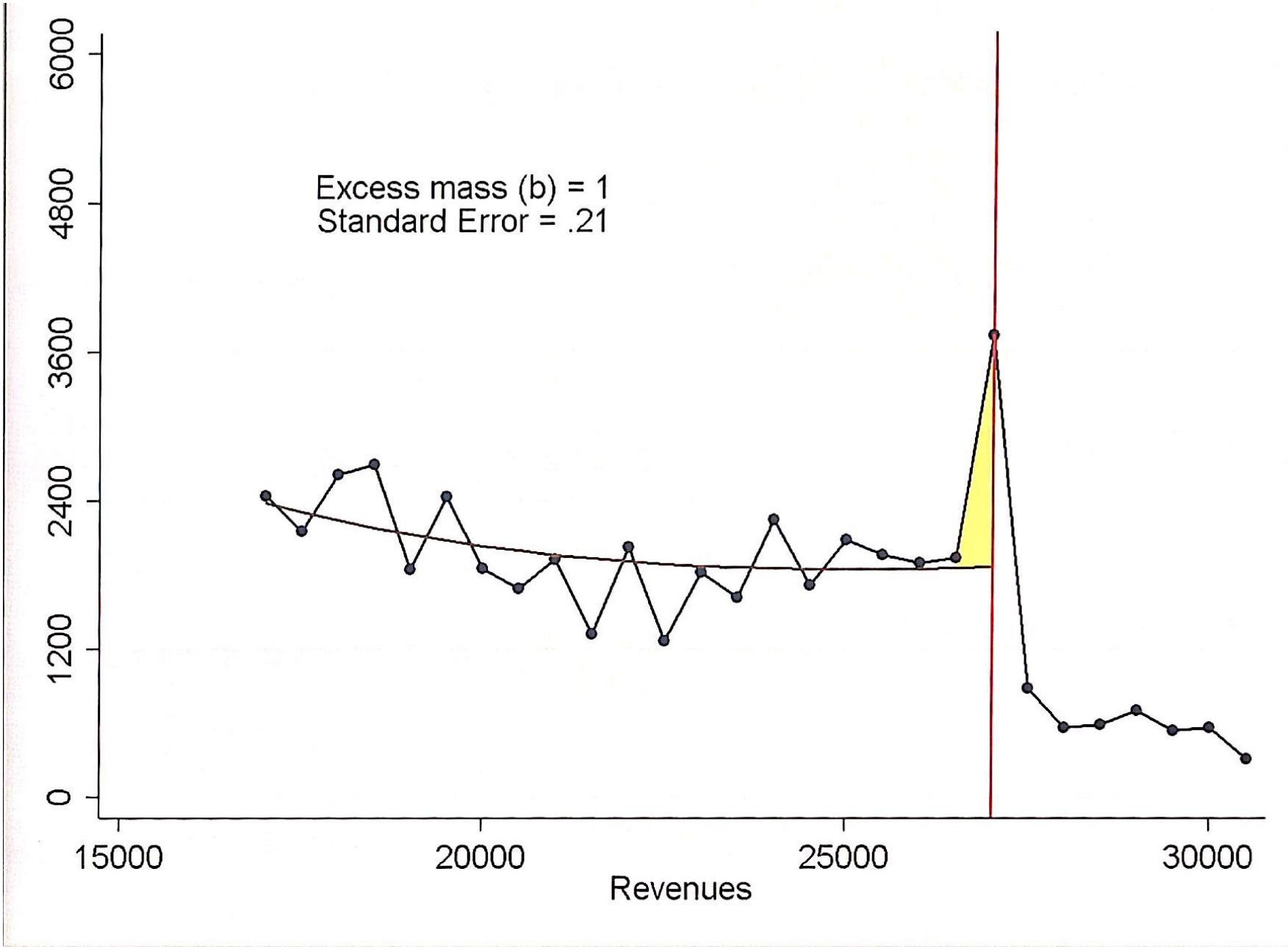
2004


Excess mass (b) = .98
Standard Error = .22
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

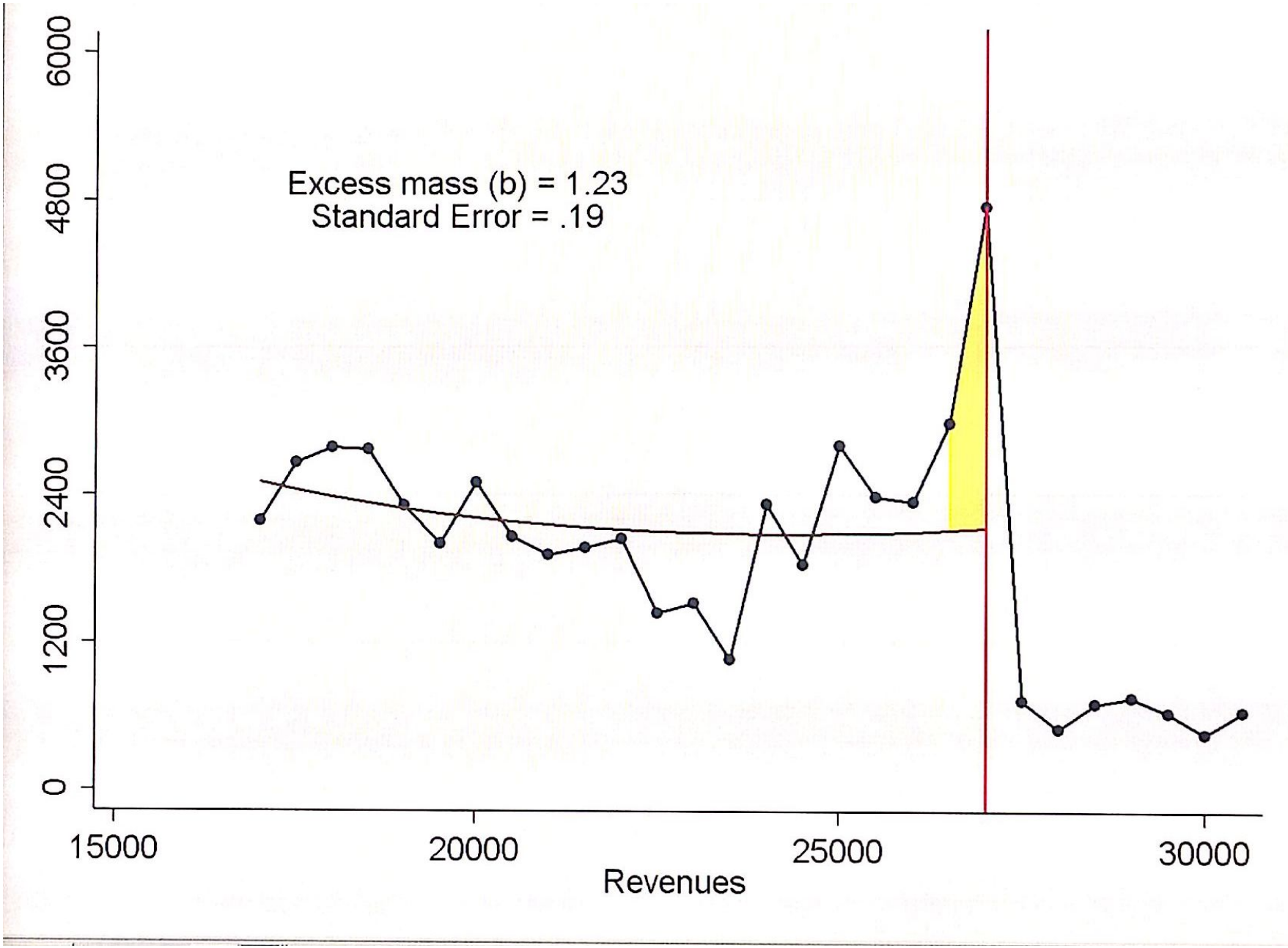
2005


Excess mass (b) = .85
Standard Error = .21
6000
4800
3600
2400
1200
0
15000
20000
25000
30000
Revenues

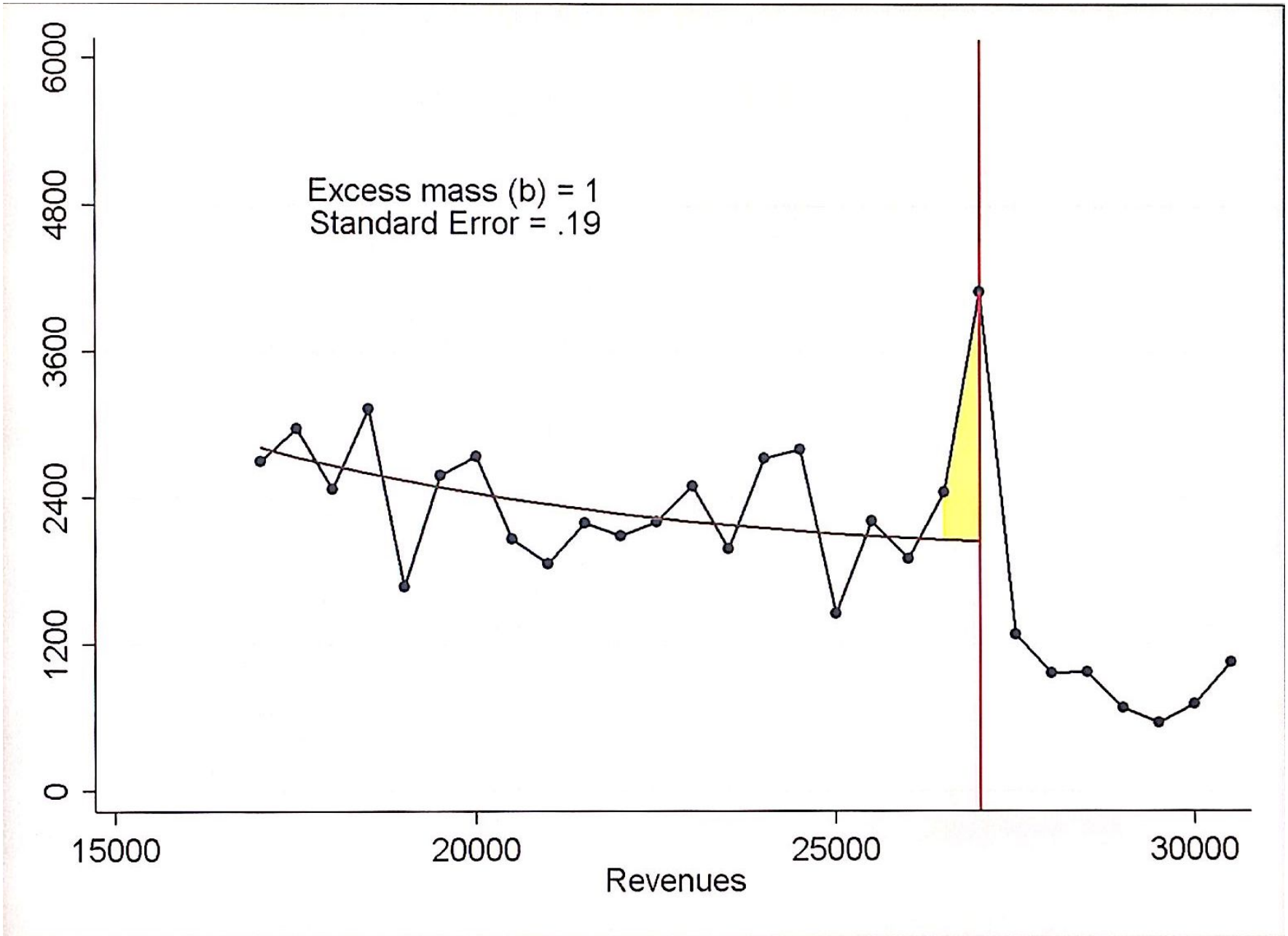
2006


Excess mass (b) = 1
Standard Error = .21
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

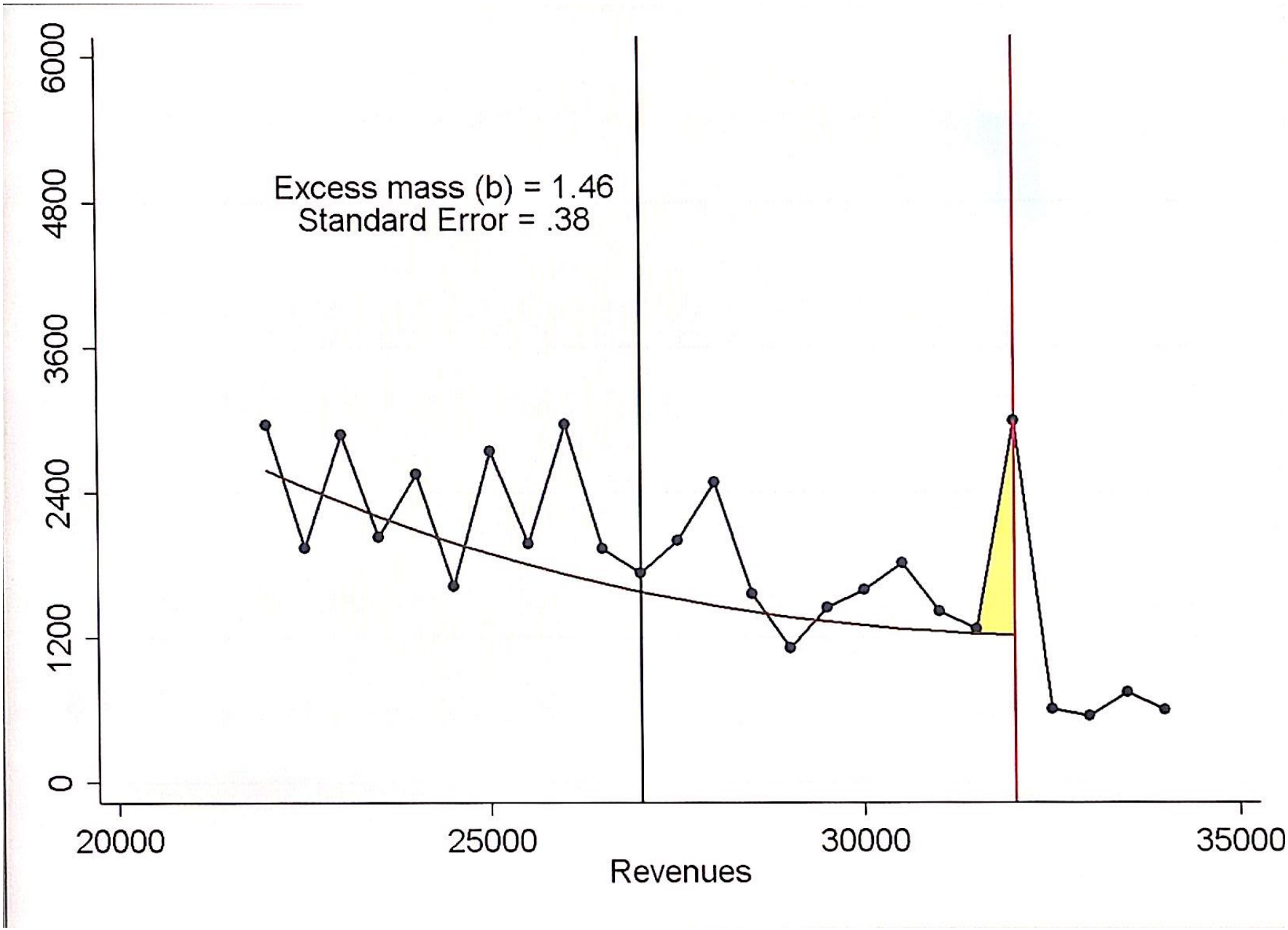
2007


Excess mass (b) = 1.23
Standard Error = .19
0
1200
2400
3600
4800
6000
15000
20000
25000
30000
Revenues

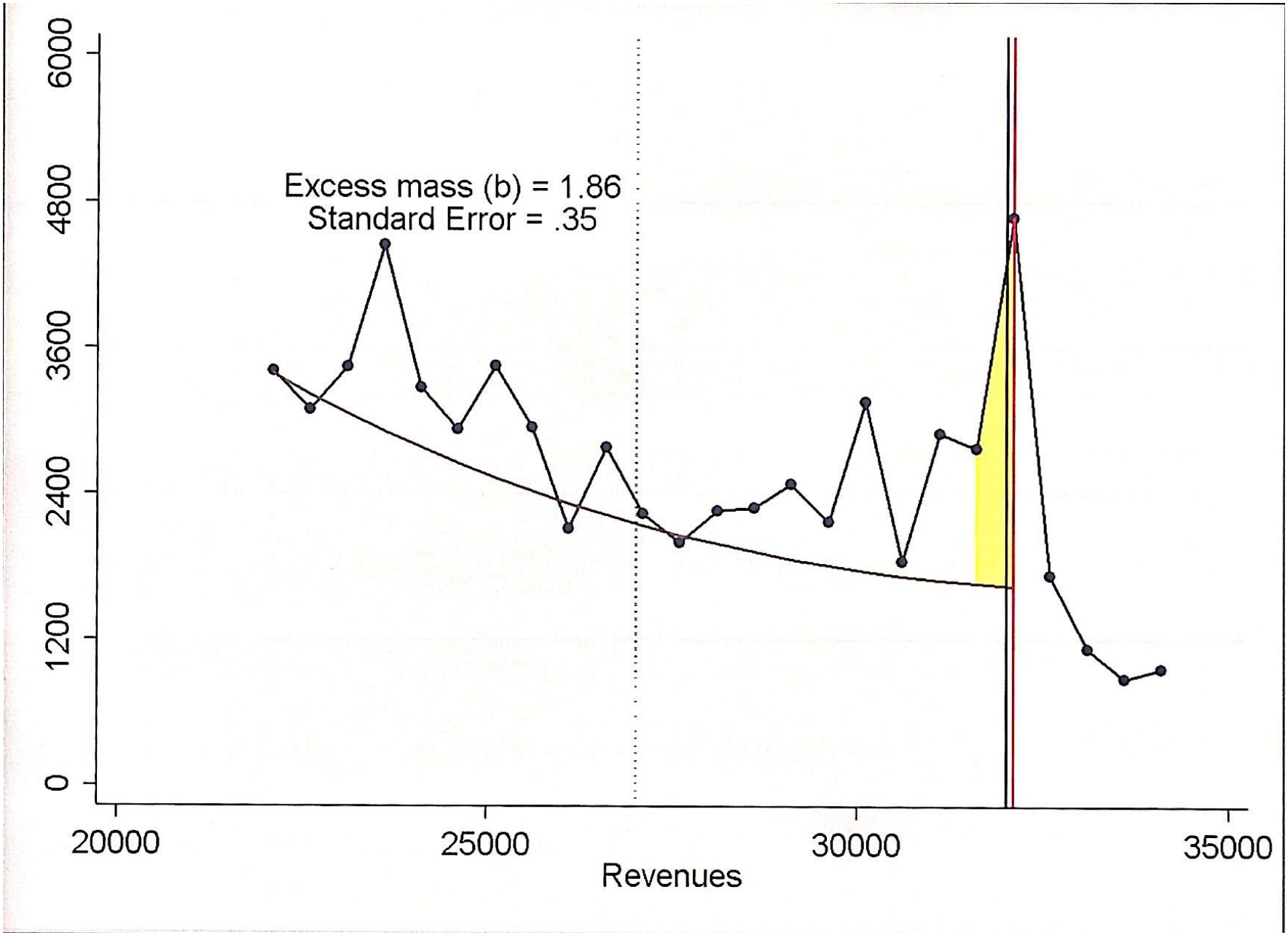
2008


Excess mass (b) = 1
Standard Error = .19
6000
4800
3600
2400
1200
0
15000
20000
25000
30000
Revenues

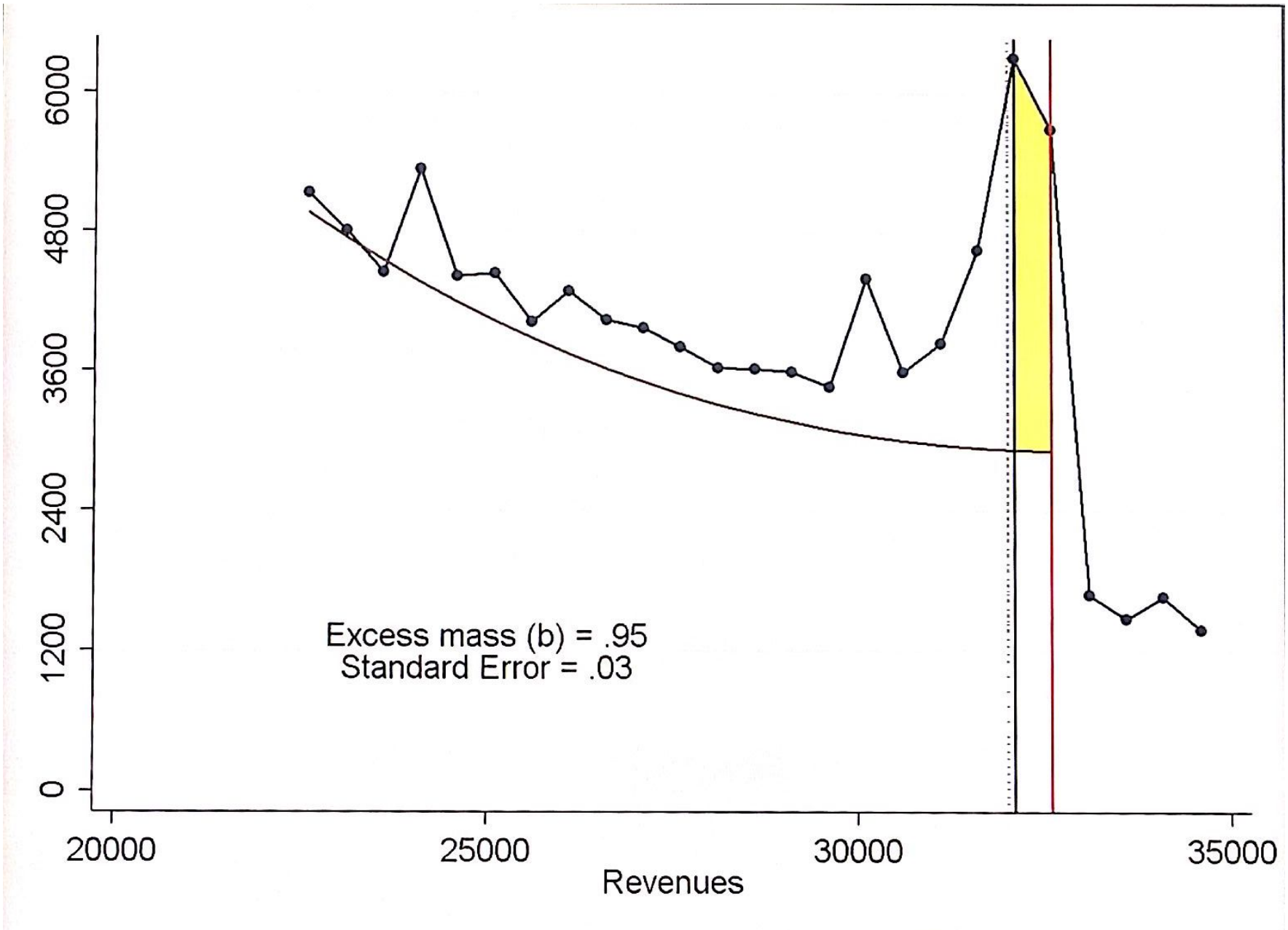
2009 (New Regime Introduction and Threshold Change)



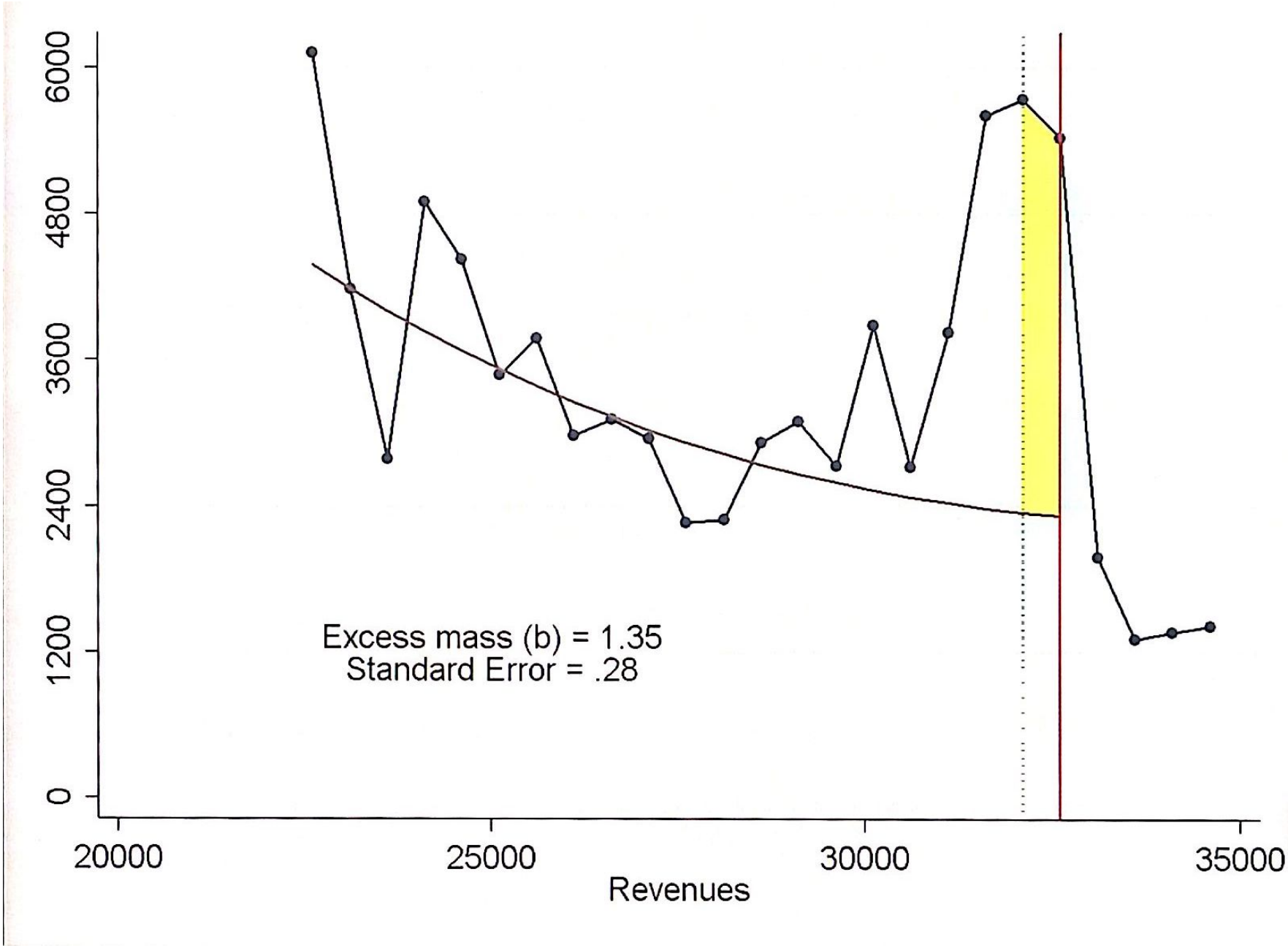
2010


Excess mass (b) = 1.86
Standard Error = .35
0
1200
2400
3600
4800
6000
20000
25000
30000
35000
Revenues

2011 (Small Threshold Change)



2012


6000
4800
3600
2400
1200
0
Excess mass (b) = 1.35
Standard Error = .28
20000
25000
30000
35000
Revenues

Summary of Dynamic Adjustments

- Stable threshold: bunching grows over time.
- Small threshold change: decline in bunching and some bunching remains at old threshold (confusion?).
- Large threshold change: significant bunching at new threshold, that still increases over time.

Elasticity Estimation

Mapping the Excess Mass to the Structural Elasticity

- Parametric form for utility: $u = c - \frac{\theta}{1+1/\varepsilon}\left(\frac{y}{\theta}\right)^{1+1/\varepsilon}$

- Tax liability in simplified & standard regime:
  $T(y) = ty + (\Delta T + \Delta t y) I(y > y^*)$
  with $t = c_m + \tau(1-\mu)$, $\Delta t = [(\mu - c_r)\tau + c_r - c_m]$,
  $\Delta T = a \equiv a_r - a_m$.

- Jump in "wedge" depends on cost relative to rebate, inflated by income tax rate (fixed), and relative **hassle costs.**

- Structural elasticity solves:

$$\frac{1}{1+\frac{\Delta y^*}{y^*}}\left[1+\frac{\Delta T/y^*}{1-t}\right] - \frac{1}{1+1/\varepsilon}\left[\frac{1}{1+\frac{\Delta y^*}{y^*}}\right]^{1+1/\varepsilon} - \frac{1}{1+\varepsilon}\left[1-\frac{\Delta t}{1-t}\right]^{1+\varepsilon} = 0$$

- Map excess mass B to earnings response Δy^*:

$$B \approx f_0(y^*)\Delta y^*$$

Reduced Form Elasticity Approximation

- Implicit average tax between y^* and $y^* + \Delta y^*$:

$$t^* = \frac{T(y^* + \Delta y^*) - T(y^*)}{\Delta y^*} \approx t + \frac{\Delta t}{\Delta y^*} y^* + \frac{\Delta T}{\Delta y^*}$$

- Reduced form

$$\varepsilon_R \equiv \frac{\Delta y^*}{y^*} \frac{1 - t^*}{\Delta t^*} = \frac{\Delta y^*}{y^*} \frac{1 - t - \frac{\Delta t}{\Delta y^*} y^* - \frac{\Delta T}{\Delta y^*}}{\frac{\Delta t}{\Delta y^*} y^* + \frac{\Delta T}{\Delta y^*}}$$

- Step 1: Benchmark without hassle costs. What is ε?

- Step 2: How large do hassle costs have to be to rationalize full response to the threshold?

Benchmark Elasticity Estimates: I&C Services

Assumption on cost structure: close to rebate (supposed to be representative).
ATR change is due to cost relative to rebate, income tax rate, and relative hassle costs.

Cost (% of rebate)	Tax bracket	Earnings Response Δz^*	ATR Jump Δt^*	Reduced-Form Elasticity e_R	Structural Elasticity e
0.7	1	730	0.27	0.12	0.06
	2	1,090	0.90	0.06	0.03
	3	1,930	2.07	0.05	0.03
0.8	1	730	0.18	0.17	0.09
	2	1,090	0.60	0.09	0.05
	3	1,930	1.38	0.10	0.05
0.9	1	730	0.09	0.34	0.17
	2	1,090	0.30	0.20	0.10
	3	1,930	0.69	0.23	0.11

Reduced form elasticity larger.
Compare to KW (0.05 - 0.15), Saez (0.7 - 1.6).
Could inflate by optimization frictions.

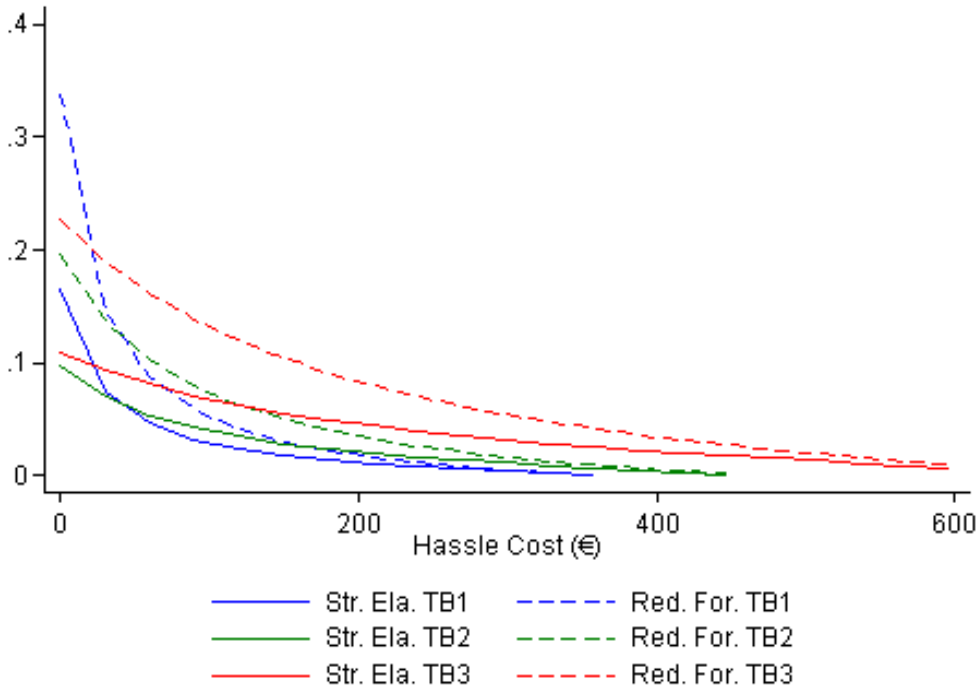
Benchmark Elasticity Estimates: Non Commercial

Larger bunching, larger elasticities. Recall: doctors, liberal professions, .. easier to avoid? More aware?

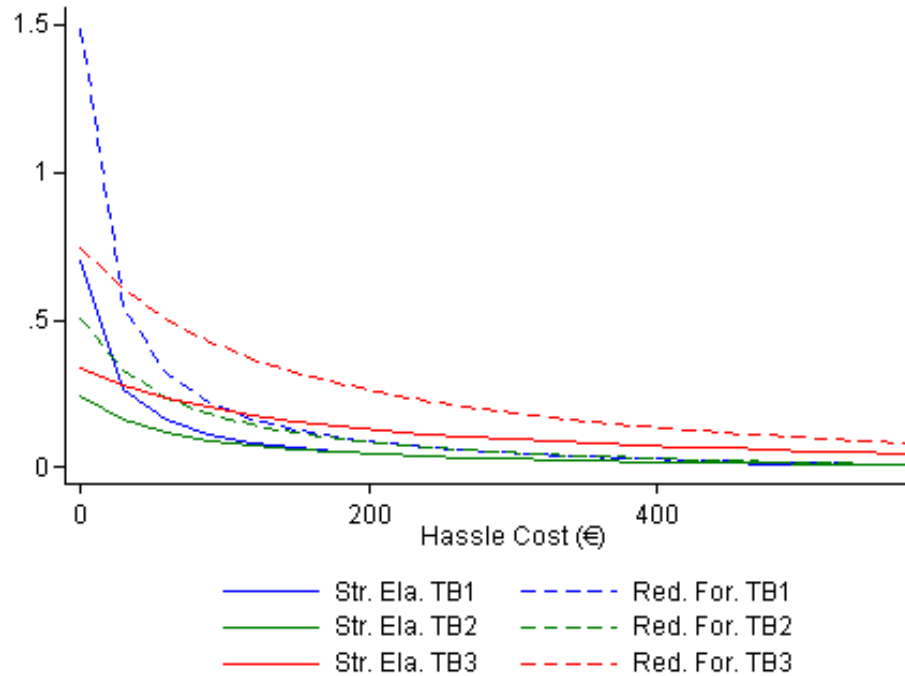
Cost (% of rebate)	Tax bracket	Earnings Response Δz^*	ATR Jump Δt^*	Reduced-Form Elasticity e_R	Structural Elasticity e
0.7	1	1,100	0.18	0.52	0.25
	2	1,240	0.62	0.16	0.08
	3	2,420	1.44	0.23	0.11
0.8	1	1,100	0.12	0.76	0.36
	2	1,240	0.41	0.25	0.12
	3	2,420	0.96	0.36	0.16
0.9	1	1,100	0.06	1.48	0.70
	2	1,240	0.21	0.51	0.24
	3	2,420	0.48	0.74	0.34

What Hassle Costs Can Fully Rationalize Observed Bunching?

I&C Services



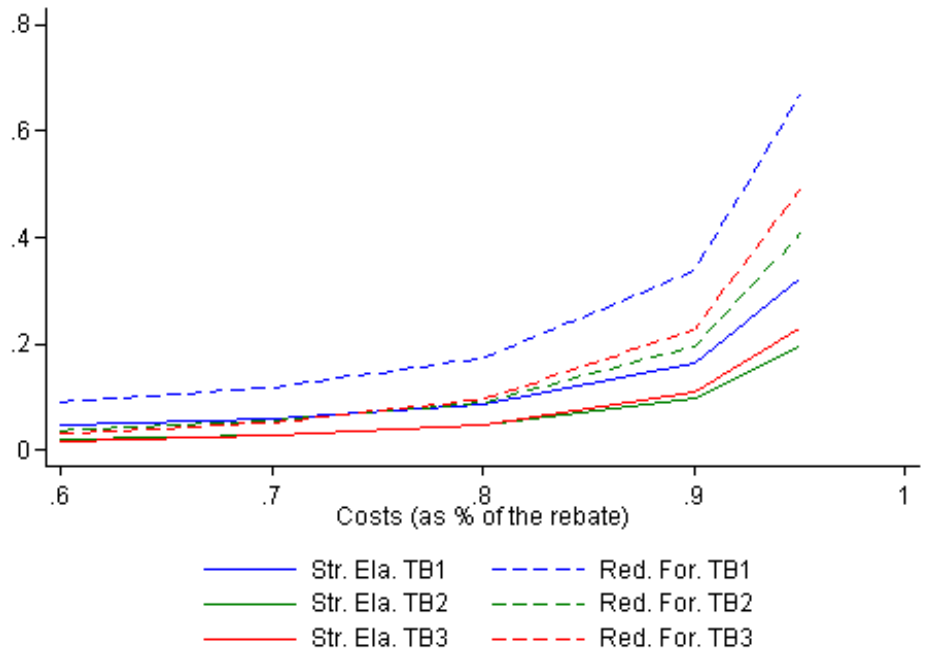
Non-Commercial

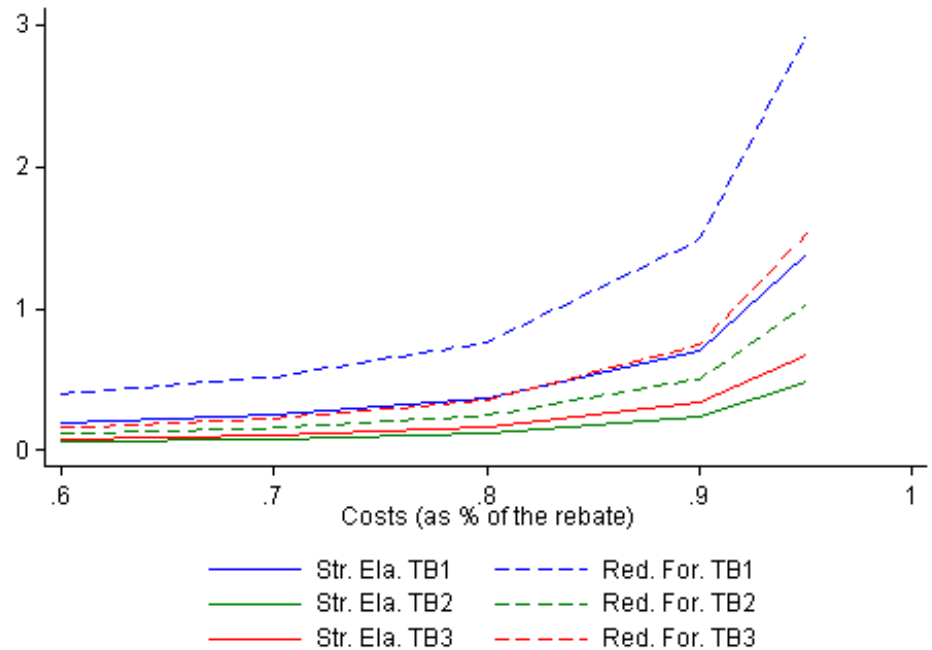


For low tax brackets $\approx$ 200 euros. High tax brackets $\approx$ 400. Even lower for Non-Commercial, where largest bunching observed.

How Does the Elasticity Vary with Operating Costs?

Acts like a change in tax – since affects the tax base in each regime.





Some Concluding Thoughts and Next Steps

- Next: Use all variation in thresholds, tax rates, rebates, across activities, people and over time to estimate structural elasticities and cost parameters (operating and hassle costs).
- Hassle costs (admin burden) act like a tax and even small ones can explain full extent of bunching.
- New regimes: learning over time. Expansion of existing regimes: immediate response.