

AIPP

8. Labor income taxation

Introduction to Bunching

João Pereira dos Santos

E-mail: joao.santos@iseg.ulisboa.pt

Queen Mary University of London, ISEG, IZA

MOTIVATION

- 1) Labor supply responses to taxation are of fundamental importance for income tax policy
- 2) Labor supply responses along many dimensions:
 - (a) **Intensive:** hours of work on the job, intensity of work, occupational choice [including education]
 - (b) **Extensive:** whether to work or not [e.g., retirement and migration decisions]
- 3) Reported earnings for tax purposes can also vary due to
 - (a) **tax avoidance** [legal tax minimization]
 - (b) **tax evasion** [illegal under-reporting]
- 4) Different responses in short-run and long-run: long-run response most important for policy, but hardest to estimate

ISSUE WITH OLS REGRESSION:
 w_i correlated with tastes for work ϵ_i

$$l_i = \alpha + \beta w_i + \epsilon_i$$

Identification is based on cross-sectional variation in w_i : comparing hours of work of highly skilled individuals (high w_i) to hours of work of low skilled individuals (low w_i)

If highly skilled workers have more taste for work (independent of the wage effect), then ϵ_i is positively correlated with w_i leading to an upward bias in OLS regression

Plausible scenario: hard workers acquire better education and hence have higher wages

Controlling for X_i can help but can never be sure that we have controlled for all the factors correlated with w_i and tastes for work: **Omitted variable bias** \Rightarrow Tax changes provide more compelling identification

From true experiment to “natural experiments”: Estimating income effects with lottery winnings

True experiments are costly to implement and hence rare

However, real economic world (nature) provides variation that can be exploited to estimate behavioral responses \Rightarrow “Natural Experiments”

Natural experiments sometimes come very close to true experiments: Imbens, Rubin, Sacerdote (2001, AER) did a survey of lottery winners and non-winners matched to Social Security administrative data to estimate income effects

Lottery generates random assignment conditional on playing

Find significant but small income effects: \$1 in lottery reduces earnings by 5-10 cents.

Identification threat: differential response-rate among groups

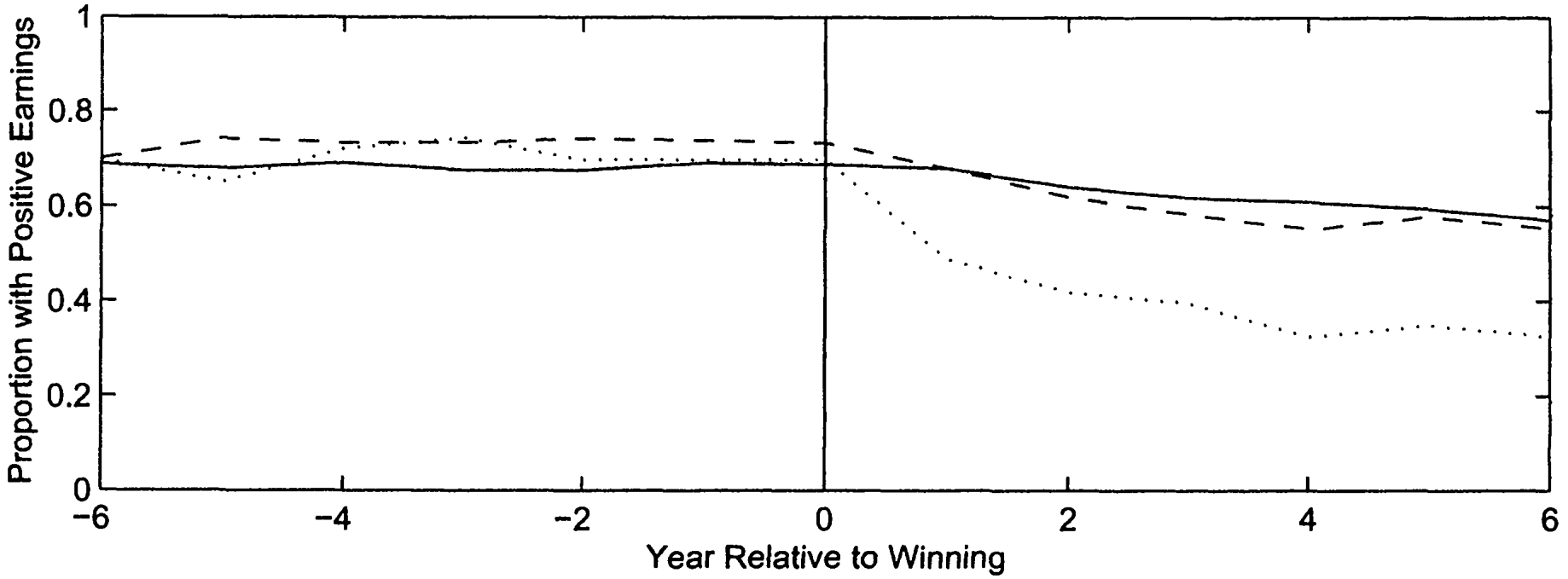


FIGURE 2. PROPORTION WITH POSITIVE EARNINGS FOR NONWINNERS, WINNERS, AND BIG WINNERS

Note: Solid line = nonwinners; dashed line = winners; dotted line = big winners.

Source: Imbens et al (2001), p. 784

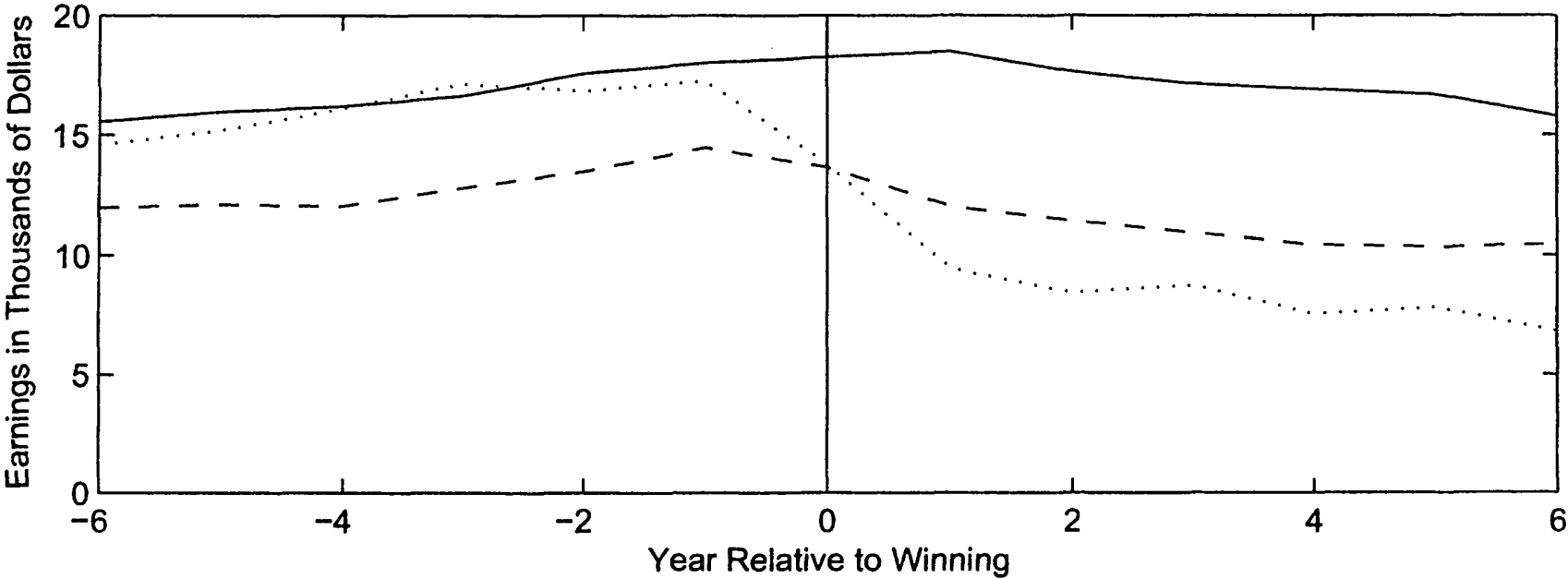


FIGURE 1. AVERAGE EARNINGS FOR NONWINNERS, WINNERS, AND BIG WINNERS

Note: Solid line = nonwinners; dashed line = winners; dotted line = big winners.

Source: Imbens et al. (2001), p. 783

Labor Supply Substitution Effects: Tax Free Second Jobs in Germany

In 2003, Germany made secondary jobs (paying less than 400 euros/month) tax free: amounts to a 20-60% subsidy on second job earnings (substitution labor supply) effect

Tazhitdinova (2022, AEJ: EP) uses social security admin monthly earnings data

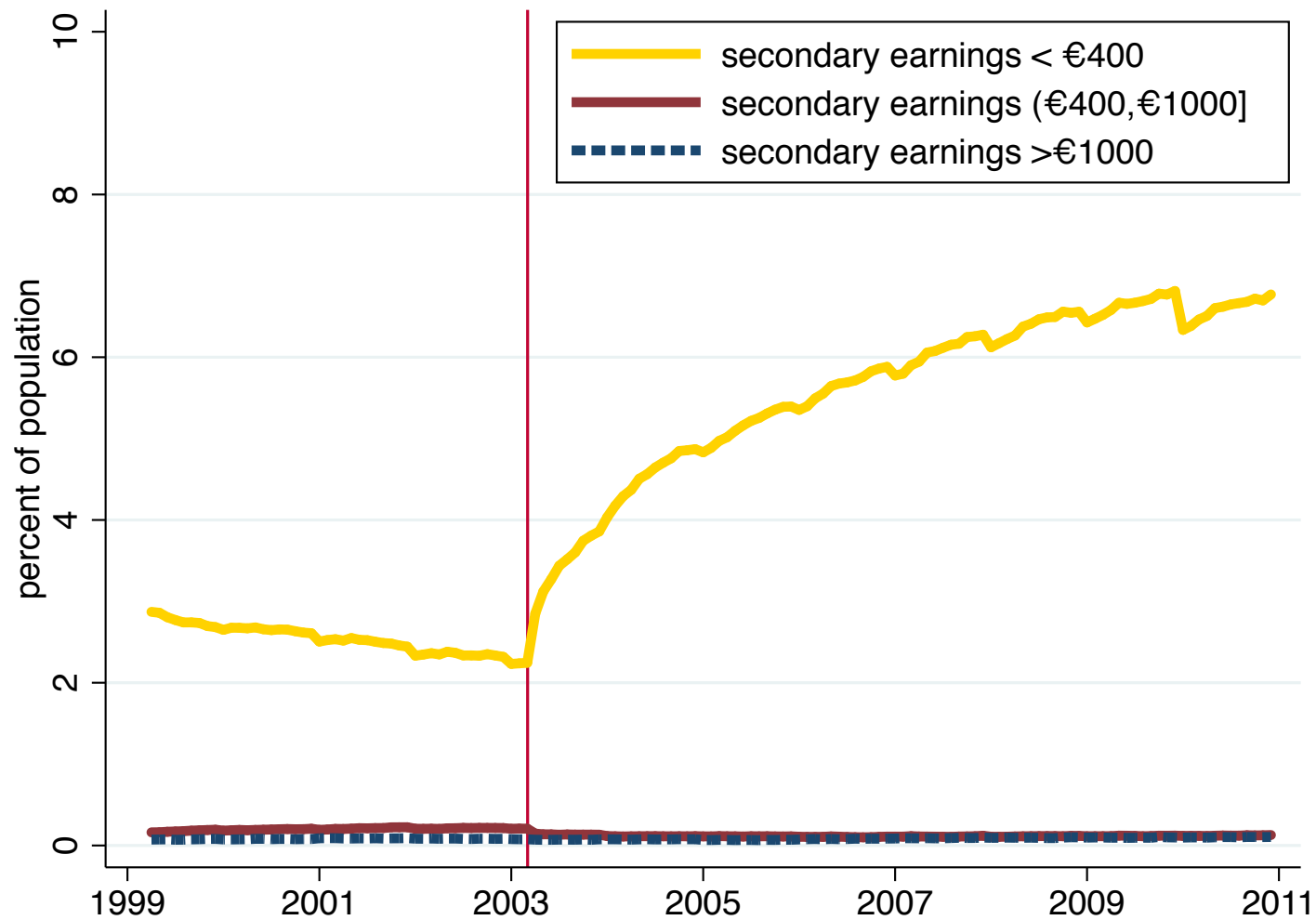
Fraction of population holding second jobs increased sharply (from 2.5% to 6-7%) with bigger response overtime

Finds no offsetting effect on primary earnings \Rightarrow People did work more

Likely happened because employers willing to create lots of mini-jobs to accommodate supply

Figure 4: Secondary Job Holding Rates by Secondary Earnings Level
Source: Tazhitdinova (2019)

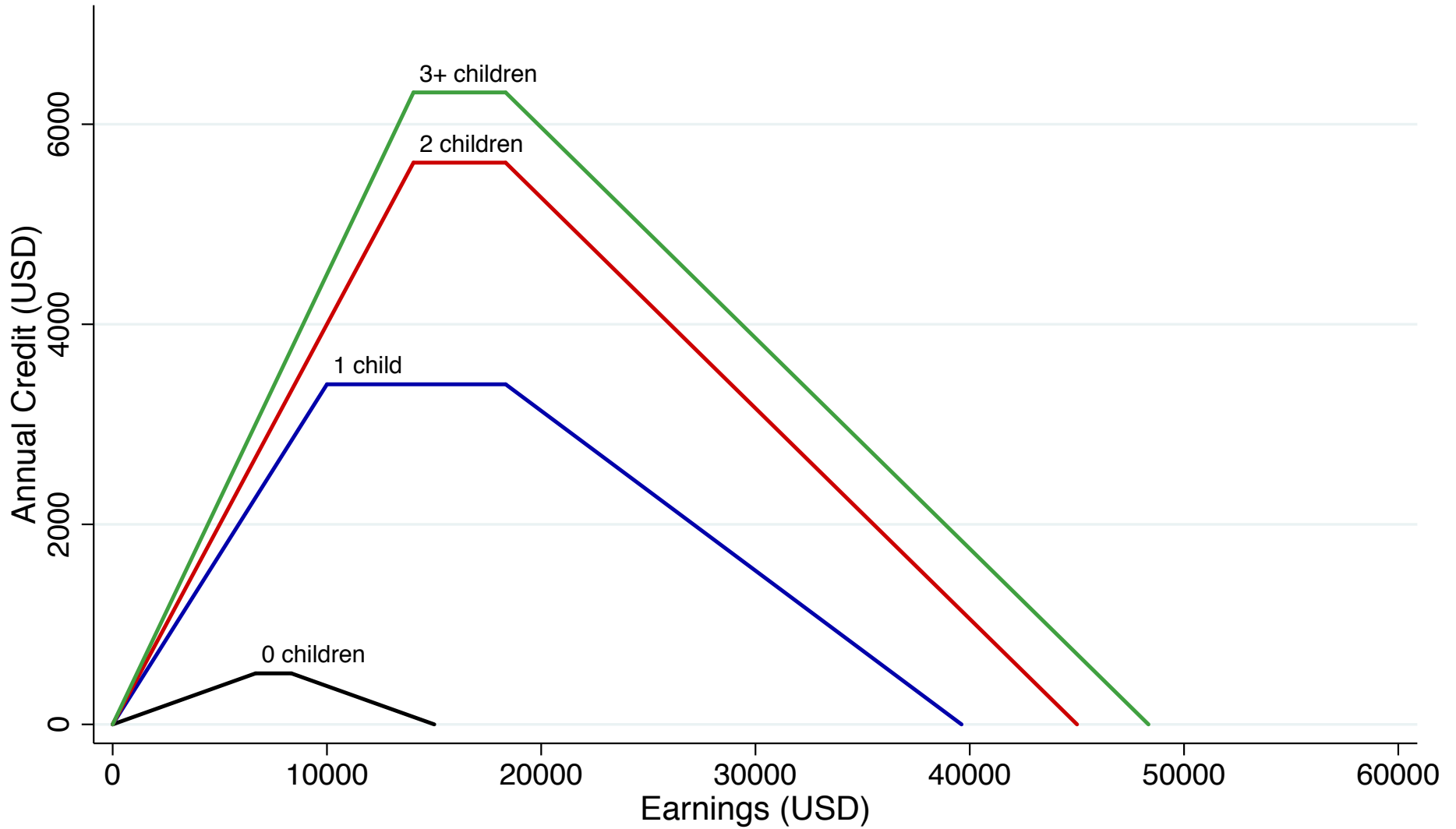
(a) same axis



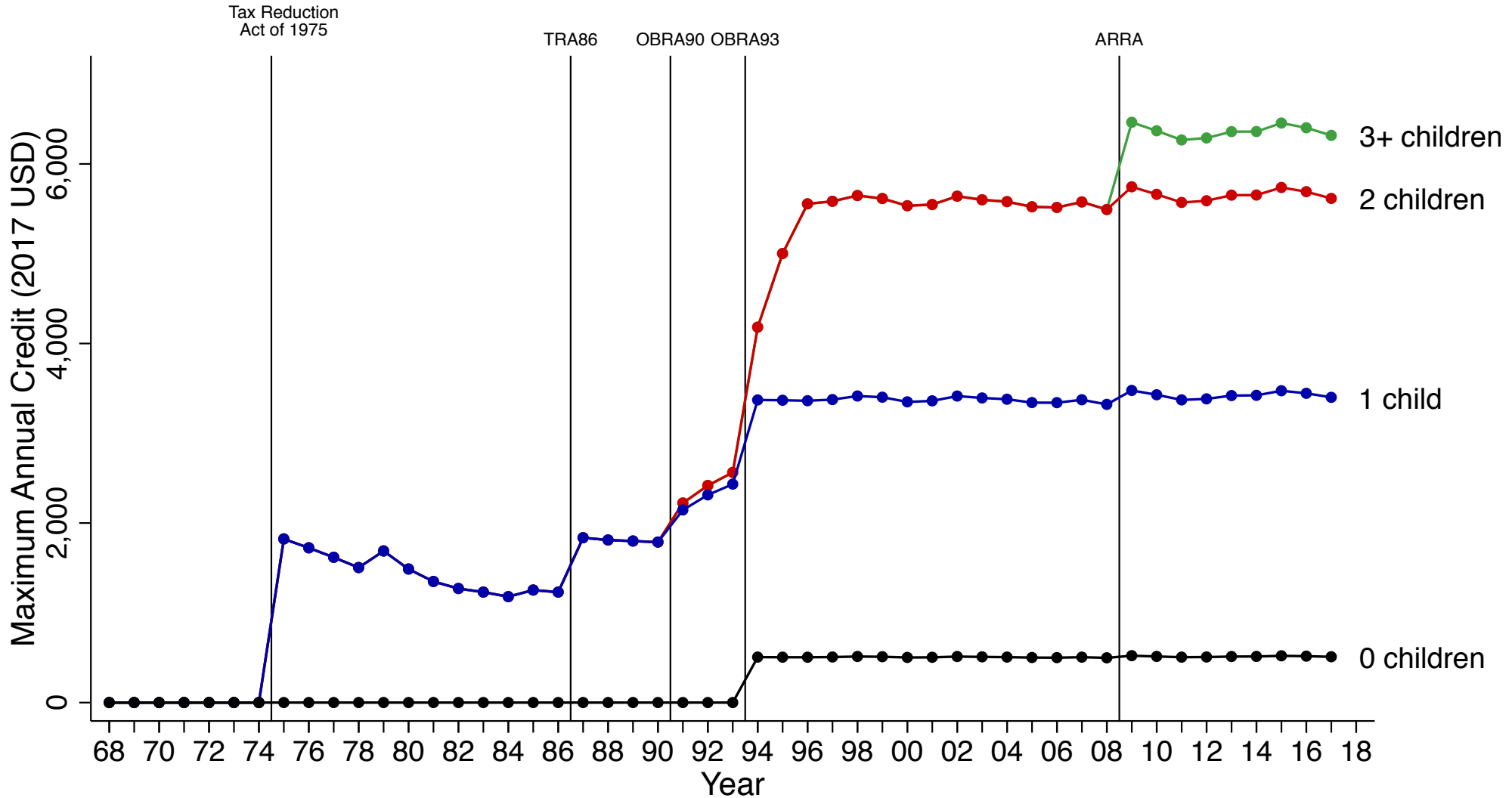
Earned Income Tax Credit (EITC) program

- 1) EITC started small in the 1970s but expanded: today, largest means-tested cash transfer program [\$75bn in 2019, 30m families recipients]
- 2) Eligibility: families with kids and low earning
- 3) Refundable Tax credit: administered through income tax as tax refund received in year $t + 1$ (for earnings in year t)
- 4) EITC has flat pyramid structure with phase-in (negative MTR), plateau, (0 MTR), and phase-out (positive MTR)
- 5) Theoretically, EITC should encourage labor force participation (extensive labor supply margin)

EITC Schedule in 2017



EITC Maximum Credit Over Time



Source: Kleven (2018)

EITC and Intensive Labor Supply Response: Bunching at Kinks

Extensive margin: EITC makes work more attractive (vs. non-work) \Rightarrow positive effect on Labor Force Participation

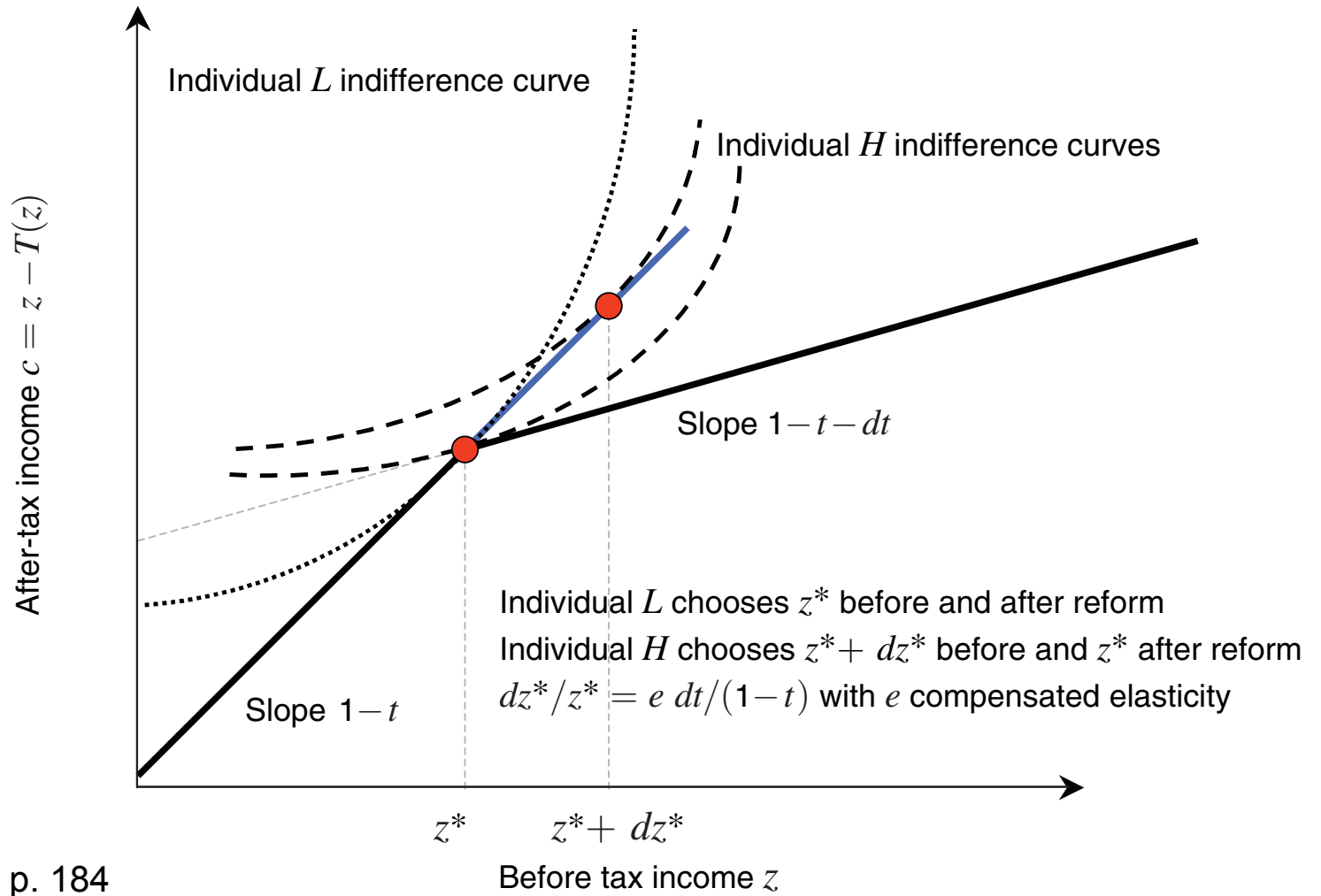
But what about the **Intensive margin:** earnings conditional on working?

Basic labor supply theory predicts that we should observe bunching of individuals at the EITC kink points:

Some individuals find it worthwhile to work more when subsidy rate is positive (maximum) but not when subsidy rate falls to 0% \Rightarrow Utility maximizing labor supply is to be exactly at the kink

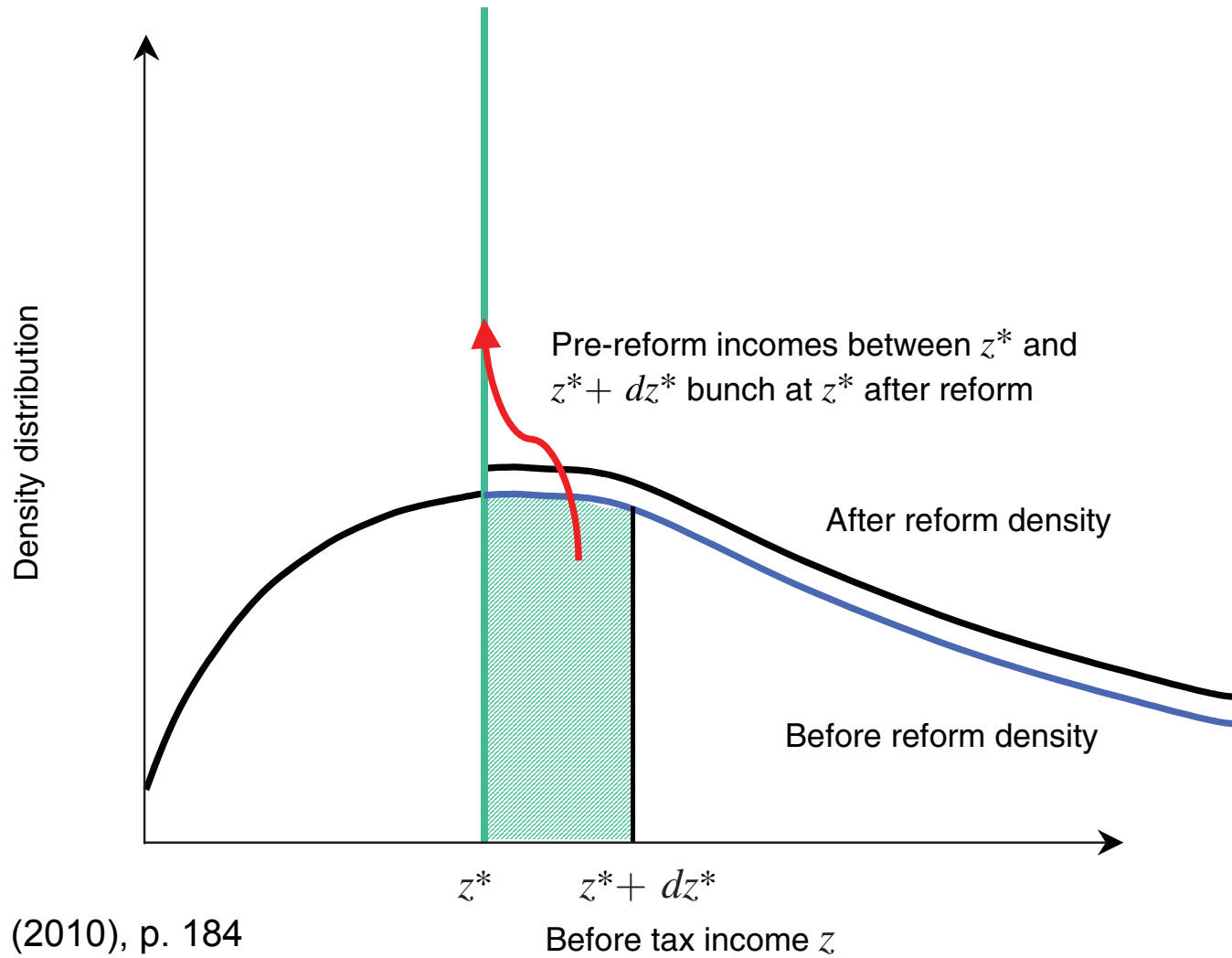
Saez (2010, AEJ:EP) finds bunching around 1st kink point of EITC but only for the self-employed \Rightarrow likely due to cheating to maximize tax refund (and not labor supply)

Panel A. Indifference curves and bunching



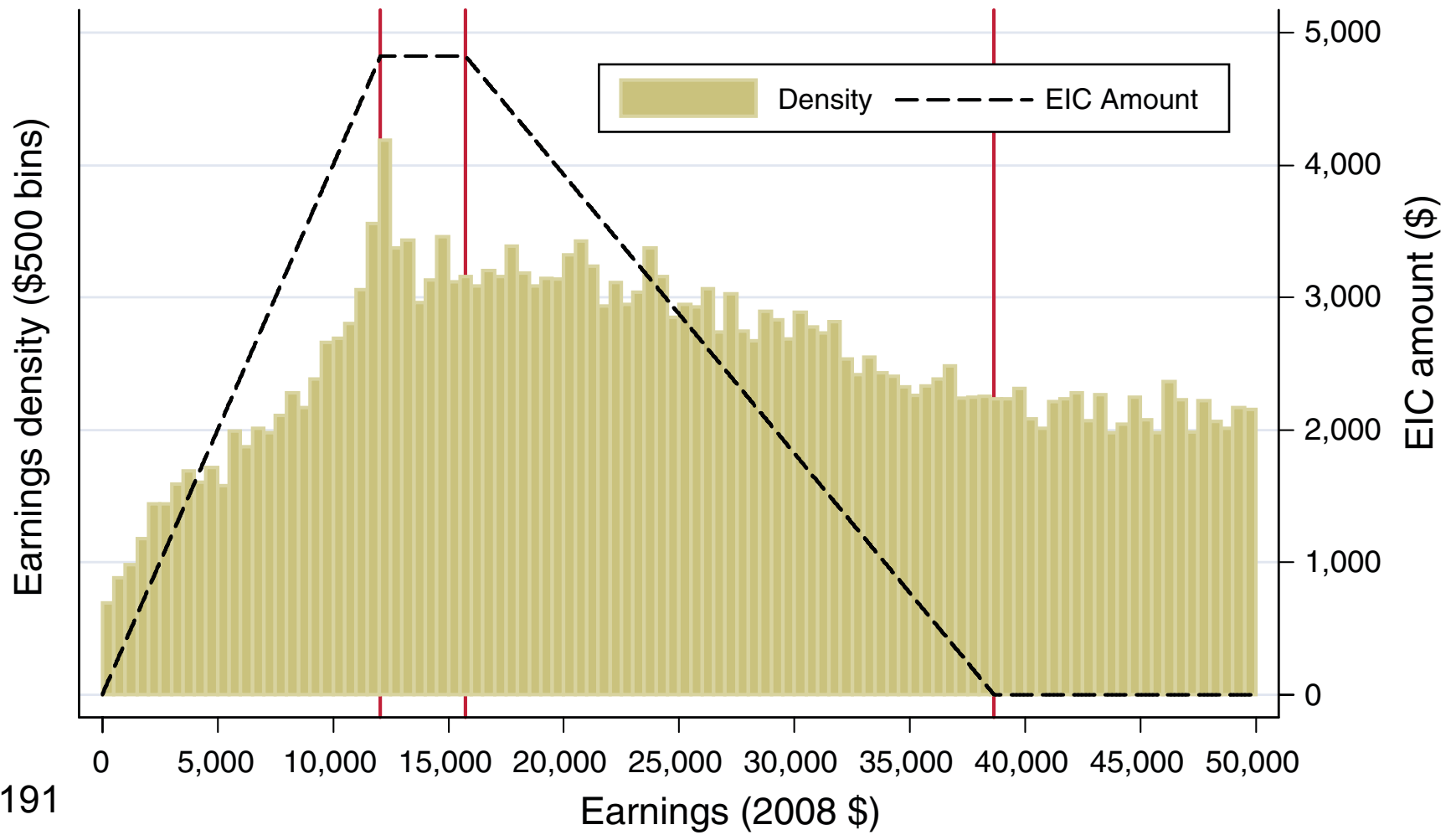
Source: Saez (2010), p. 184

Panel B. Density distributions and bunching

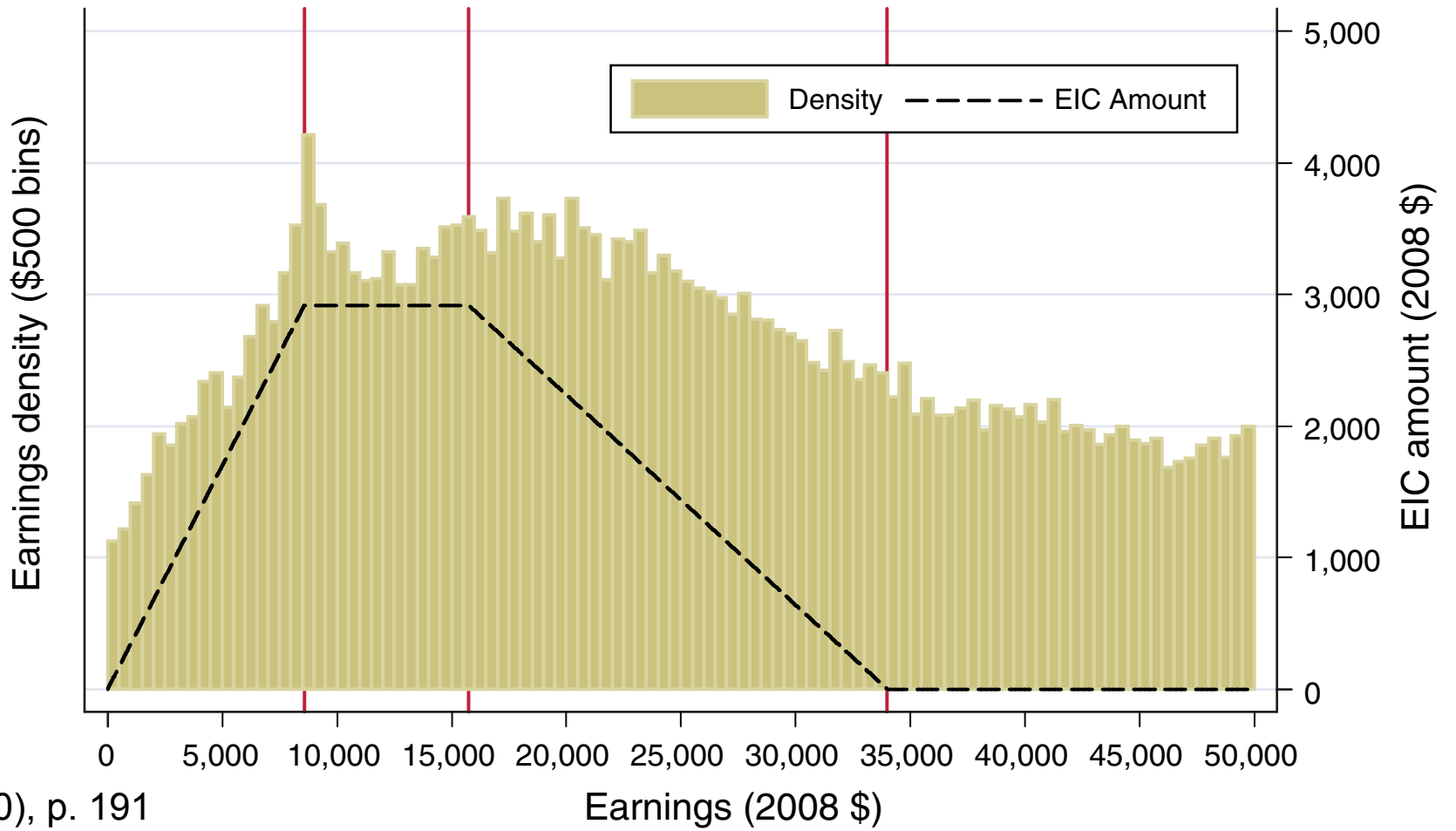


Source: Saez (2010), p. 184

B. Two children or more



Panel A. One child

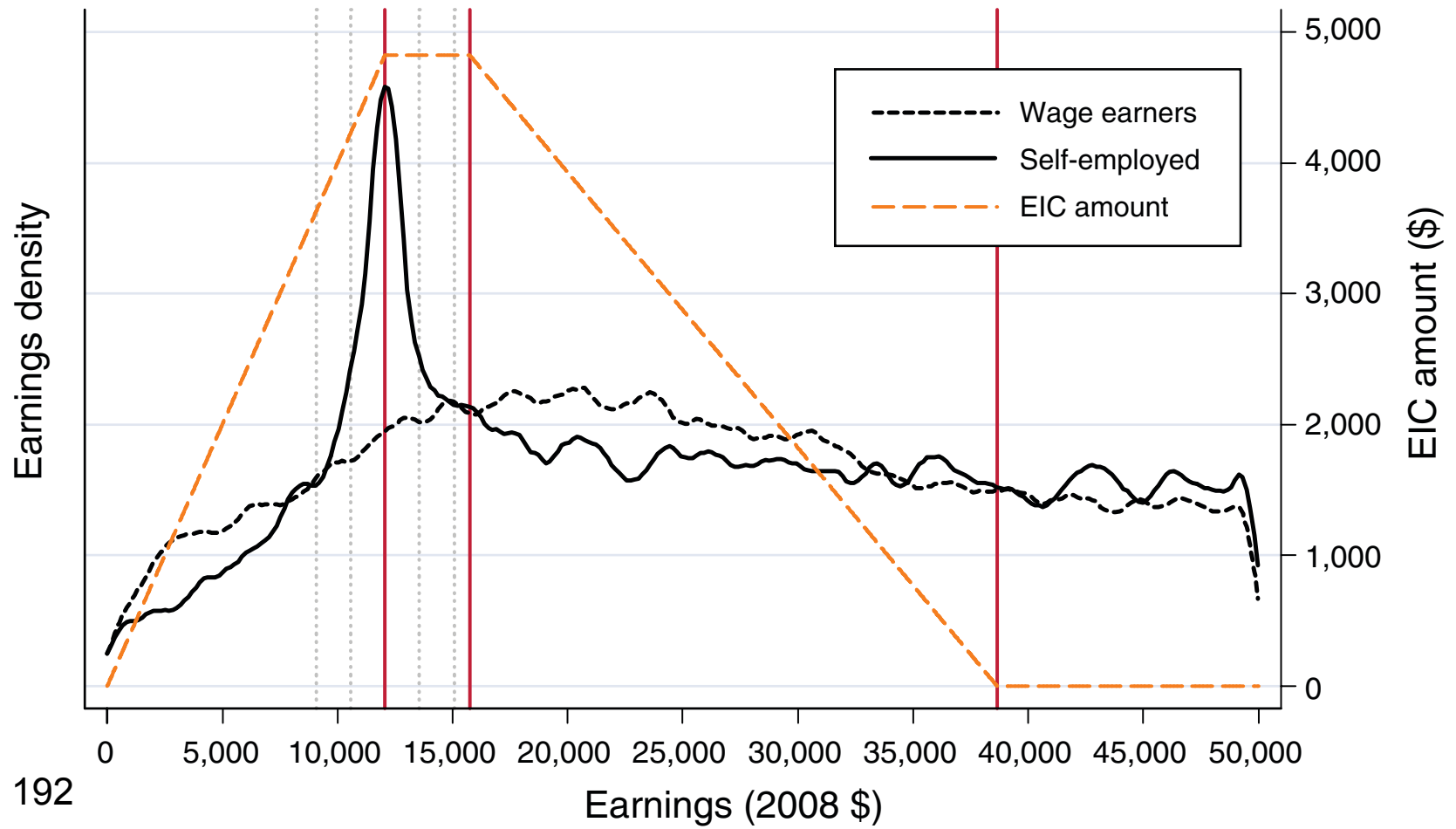


Source: Saez (2010), p. 191

Panel A. One child



Panel B. Two or more children



EITC Empirical Studies

Some evidence of response along extensive margin but little evidence of response along intensive margin (except for self-employed)

⇒ Possibly due to lack of understanding of the program

Qualitative surveys show that:

Low income families know about EITC and understand that they get a tax refund if they work

However very few families know whether tax refund increases or decreases with earnings

Such confusion might be good for the government as the EITC induces work along participation margin without discouraging work along intensive margin

Next topics

So far, we focused (mostly) on the left tale of the income distribution (and welfare programs)

We will now look into

1) Tax evasion and enforcement in income taxation: Kleven, Knudsen, Kreiner, Pedersen, and Saez (2011, Econometrica)

2) Estimation of Labor Supply Elasticities:

- Kleven and Schultz (2014, AEJ: EP)
- The Laffer Curve and “Supply Side Economics”: DeBacker, Heim, Ramnath, Ross (2022, J Pub E)

3) Evidence of international mobility

- Special schemes for football players: Kleven, Landais, and Saez (AER, 2013)
- Danish tax scheme: Kleven, Landais, Saez, and Schultz, (2013, QJE)

Tax evasion and enforcement in income taxation

Enforcement is costly both

- for government (tax administration) and
- for private agents (tax compliance costs)

Tax evasion hard to measure as individuals purposely conceal it ⇒ Standard data collection methods are unreliable

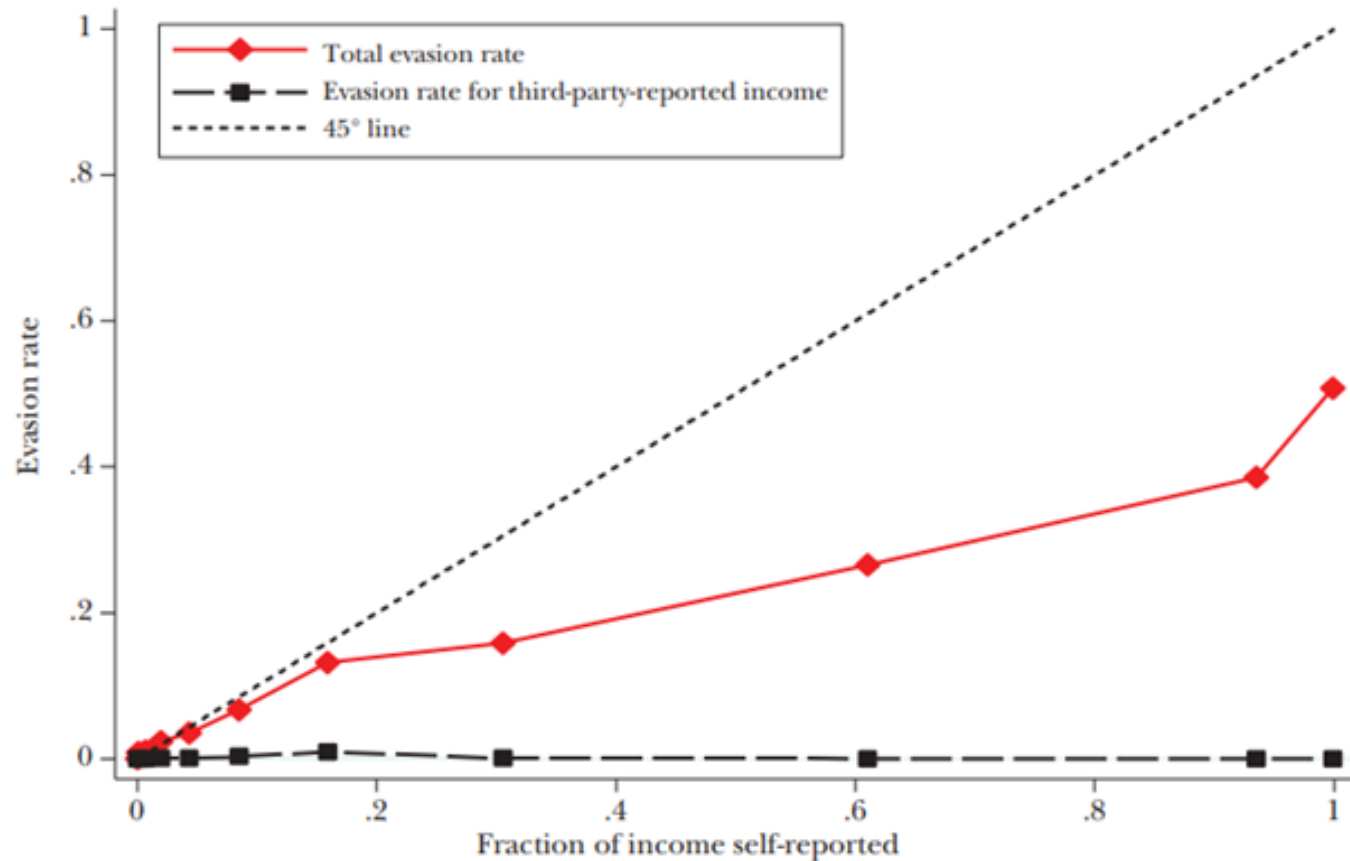
Measurement of explanatory variables (such as the threat of punishment and shame) is difficult

Solution in the compliance literature: experimental data

Danish income tax auditing experiment with sample of around 40,000 individuals: 25,000 employees and 18,000 self-employed

Evasion by Fraction of Income Self-Reported

(from a Danish tax audit field experiment)



Source: Kleven, Knudsen, Kreiner, Pedersen, and Saez (2011).

Notes: The figure displays estimates of the total evasion rate (fraction of total income undeclared) and the evasion rate for third-party-reported income (fraction of third-party-reported income undeclared), conditional on having positive evasion, by deciles of the fraction of income self-reported. Further details can be found in the original source.

Kleven et al. (2011, Econometrica)

Unwilling or Unable to Cheat?

Findings:

- Overall evasion rate is small: 2.5%
- Evasion rate jumps for self-reported items and is almost 40% (but 95% of income is third-party reported)

“Within-person prediction”: individuals fully declare third-party income but evade on self-reported income

Main take-away:

Individuals are not unwilling to evade but unable to do so.

Progressive Taxation

Most developed countries have progressive income tax systems

- Tax rates rise with income, so rich pay a larger proportion of their incomes in taxes than the poor
- Typically implemented with a set of separate tax brackets based on income

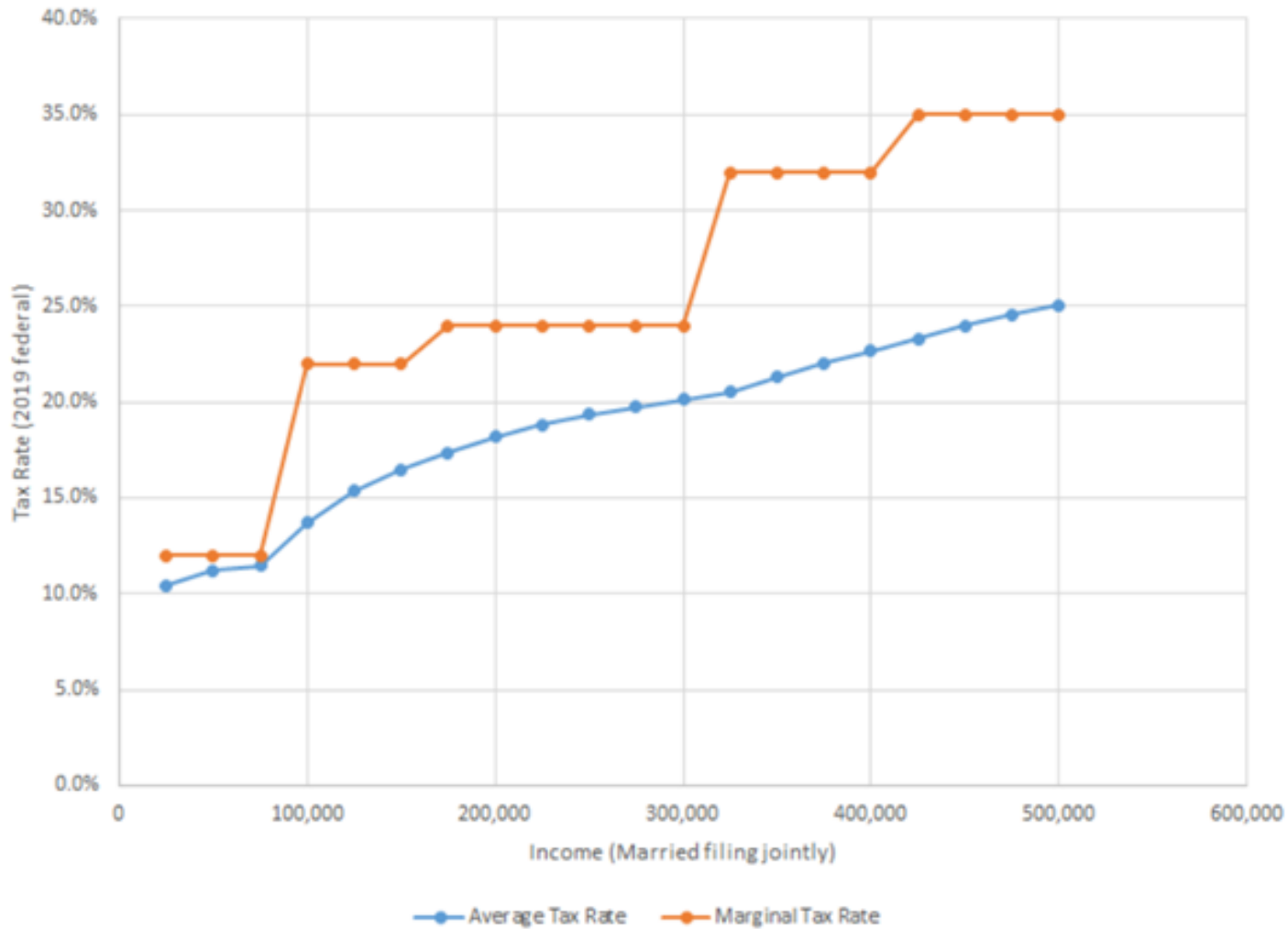
Two different concepts: MTR and ATR

Particular focus on marginal tax rates on highest income earners (“top income tax rate”)

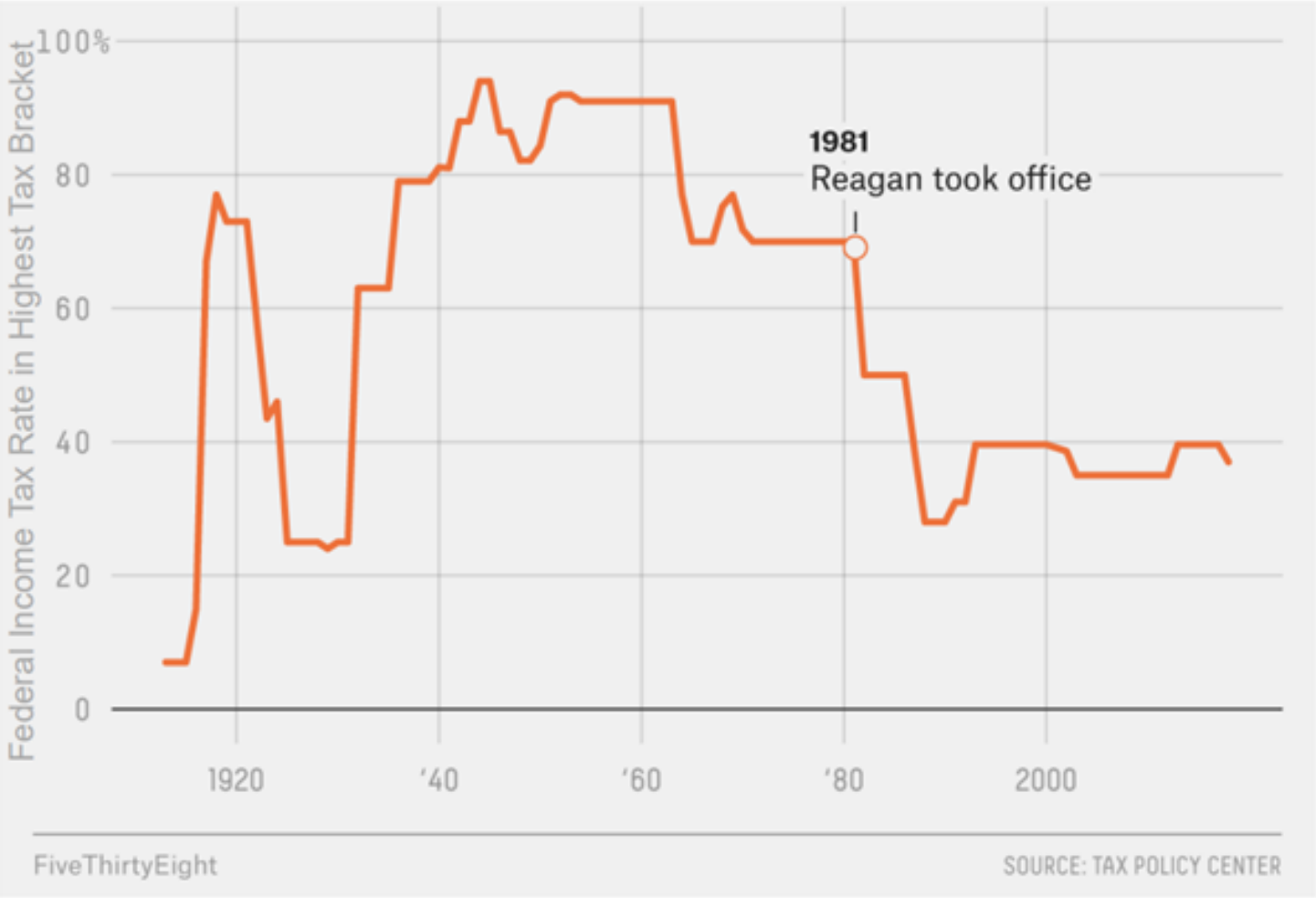
- Generates significant revenue given concentration of income at the top of the distribution
- Top income tax rates have fluctuated significantly over time in the U.S (and elsewhere)

Two different concepts: MTR and ATR

Marginal Income Tax Rates vs. Average Tax Rates: Illustrative Example



Top Marginal Income Tax Rates in the U.S. Over the Past 100 Years



Estimating Labor Supply Elasticities

Several modern studies use DD methods to estimate effects of taxation on how much people work

- Typical approach: analyze impacts of a change in tax rates for one group (e.g., top income earners) and other income groups as a control

Kleven and Schultz (AEJ-EP, 2014) use Danish data for the full-population over 25 years

- Sample is 37 million obs

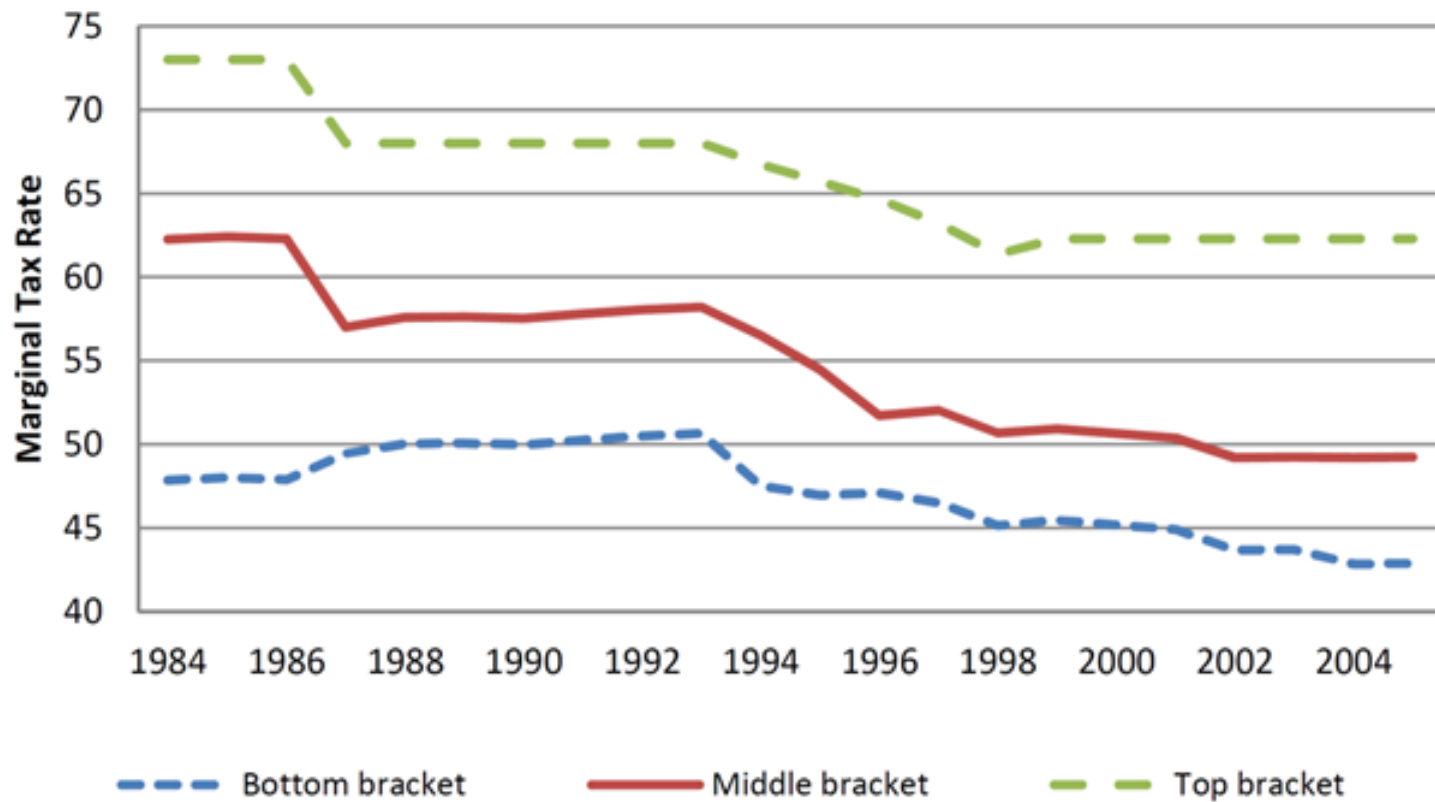
Danish tax reforms

- Stable income distribution throughout the period
- Clear and large tax variations

Method

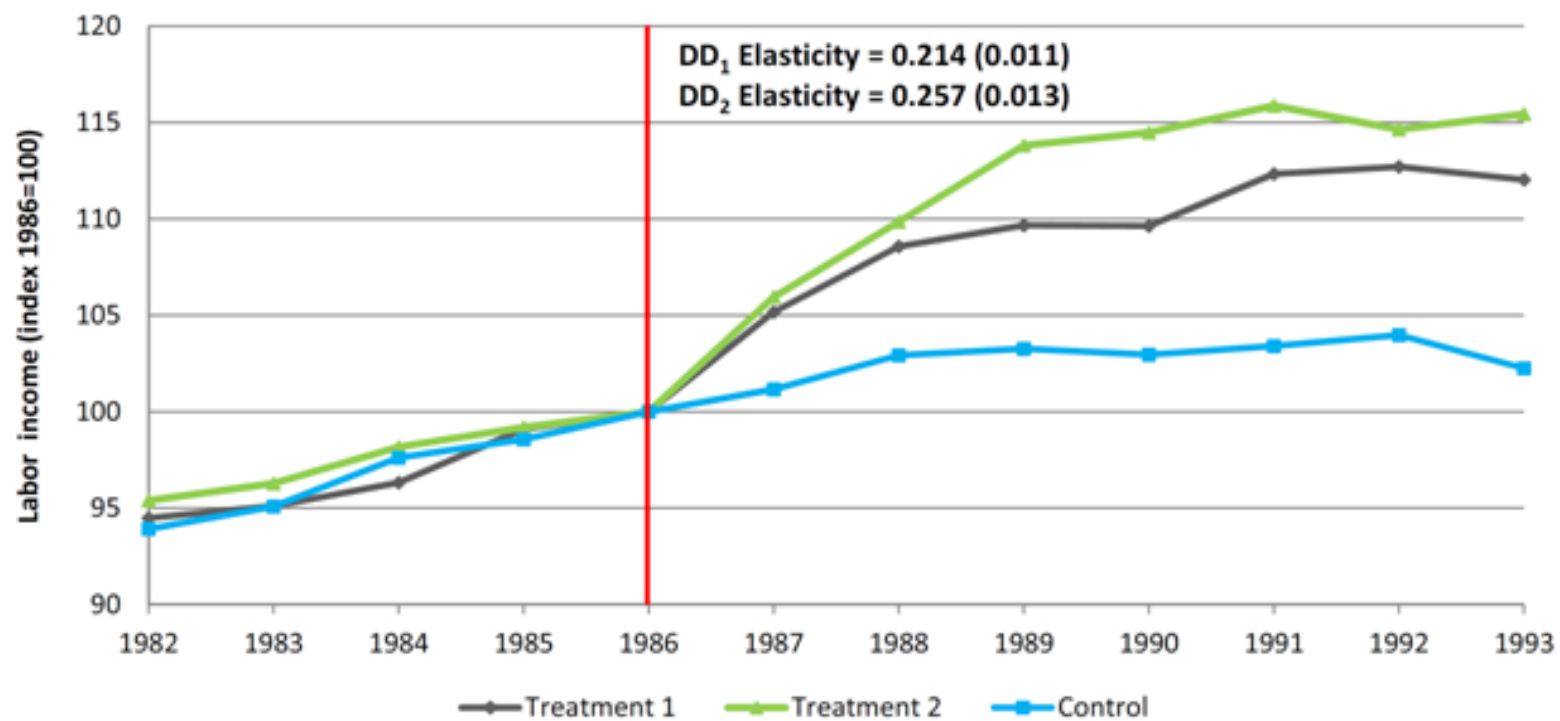
- Define treatment/control pre-reform and follow the same group before and after the reforms

Marginal Tax Rates on Labor Income in Denmark, 1984-2005



Source: Kleven and Schultz (2014)

Effects of the 1987 Danish Tax Cut on Taxable Labor Income



Source: Kleven and Schultz (2014)

Note: normalize 1986 levels = 100 and check PTA

Estimating Effects of Income Tax Changes

Another approach: use state-level tax variation as a natural experiment

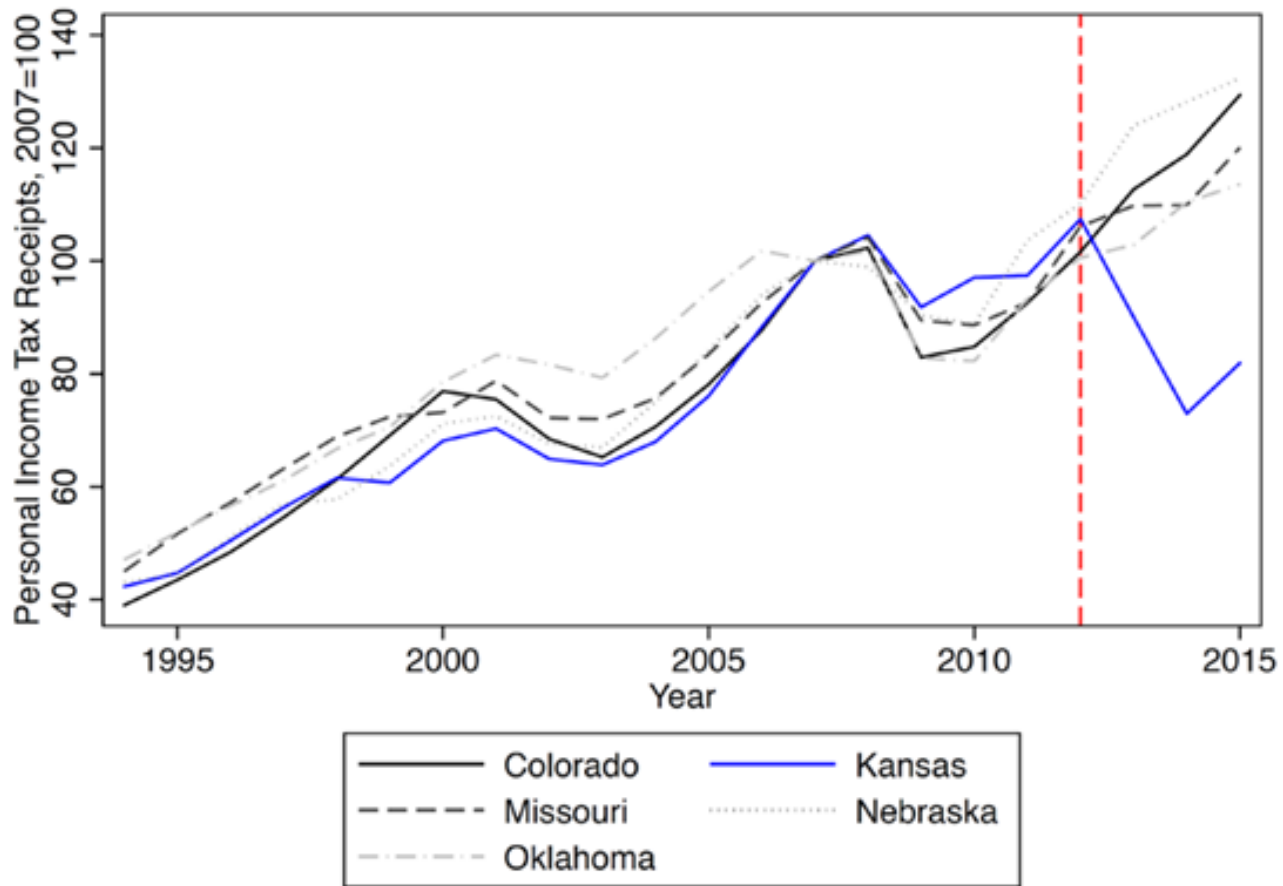
In 2012, Kansas enacted sharp tax cuts on top incomes:

- Top income tax rates reduced from 6.45% to 4.9%
- Business income taxes reduced sharply to zero on some forms of income
- Governor Sam Brownback: plan would deliver a “shot of adrenaline” to Kansas economy and tax cuts would pay for themselves

Is this what happened? Recent studies evaluate this using tax data from Kansas and other states

At least in the short-run, no

Personal Income Tax Revenue, Kansas vs. Surrounding States, 1994-2015



Source: DeBacker et al. (2019, J Pub E)

Tax-Induced International Migration

Taxation may affect labor mobility:

- High-skilled labor potentially very responsive to tax differentials
- Holds particularly true in a globalized world where migration barriers are low

Consequences of such responses:

- Potentially large efficiency costs of taxation
- Internationally mobile labor may induce socially suboptimal income tax competition between countries (run to the bottom type of stories)

Kleven, Landais, Saez (2013, AER) is a seminal contribution to this literature

- They examine whether tax rates impact labor mobility of professional football players in Europe

Kleven, Landais, Saez (2013, AER)

Why football players?

- Low mobility costs for football players
- Micro data on the careers and mobility of football players for many countries and over long time periods
- Exogenous variation in tax policy and regulation of football market over time (both within and across countries)

European football market

- Bosman ruling (1995): elimination of the rule for maximum 3 foreign players
- Beckham law in Spain (2004): top MTR reduced from 45% to 24% for foreign workers

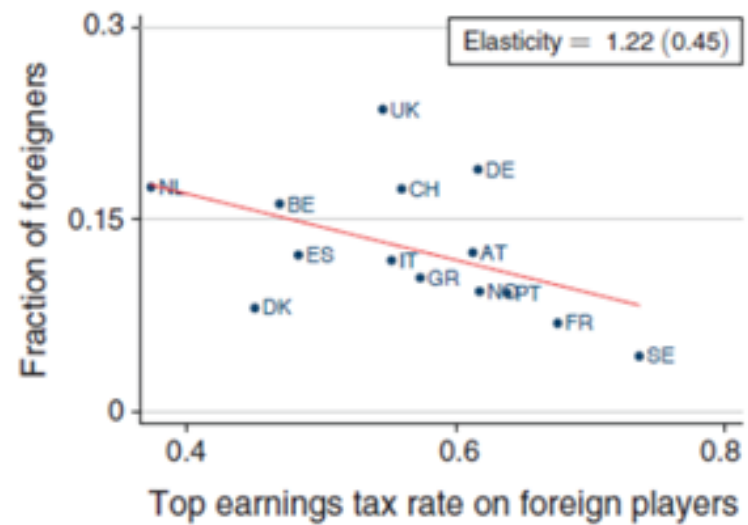
Empirical strategy

- (i) Cross-country correlations between MTR and number of foreign players before/after Bosman ruling (drawback: cannot control for unobservable country specific shocks)
- (ii) Exploit Beckham 2004 law in Spain using SCM

1. Before Bosman ruling 1985–1995

2. After Bosman ruling 1996–2008

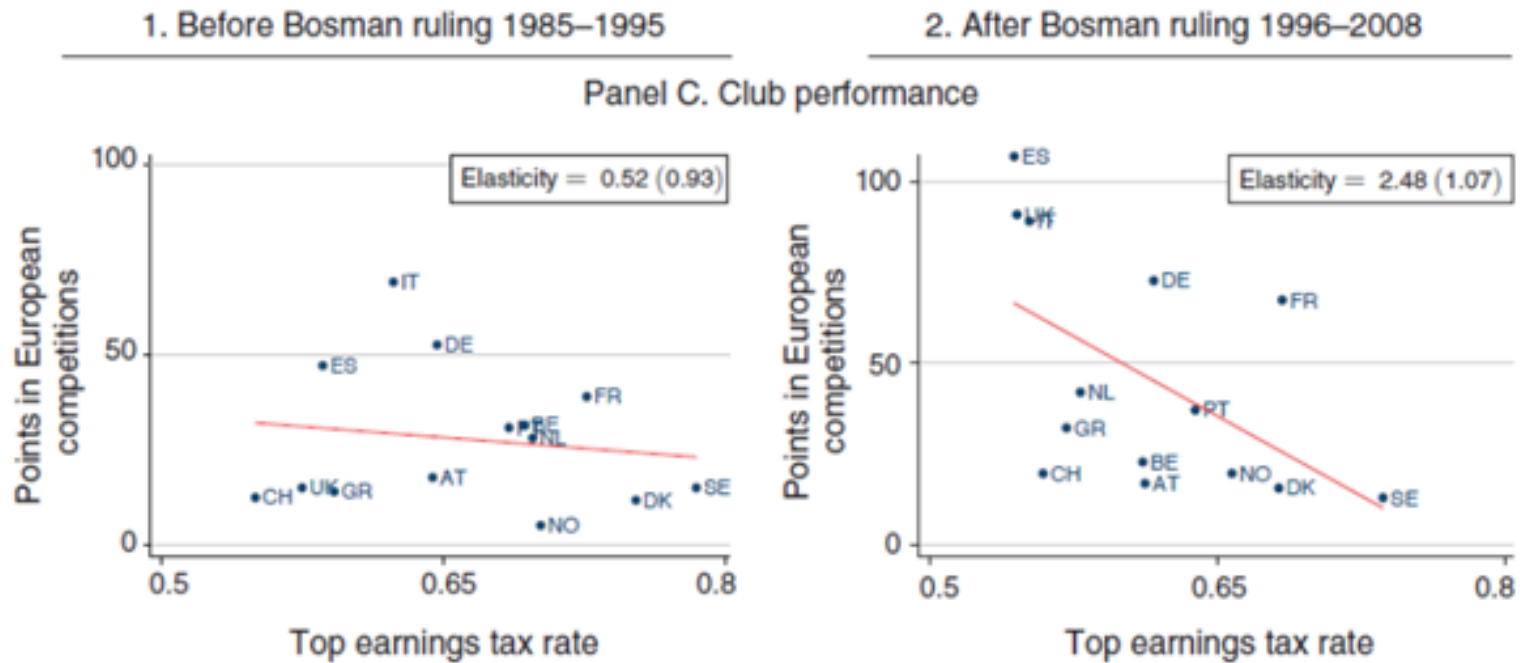
Panel A. In-migration of foreign players



SOURCE : Kleven, Landais and Saez (AER 2013), Fig. 1.A, p. 1904.

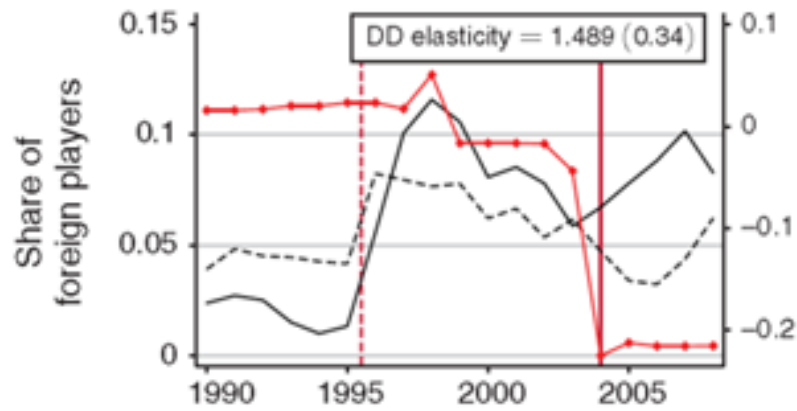
Post-Bosman: higher fraction of foreigners, negative correlation with tax rate

Did it have an impact on performance?

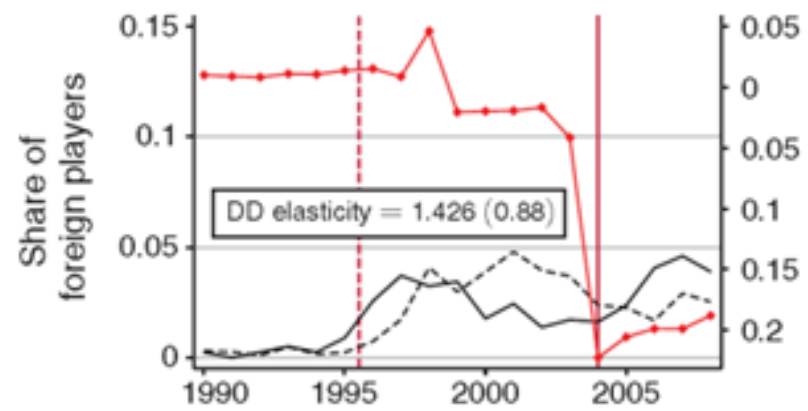


SOURCE : Kleven, Landais and Saez (AER 2013), Fig. 1.C, p. 1904.

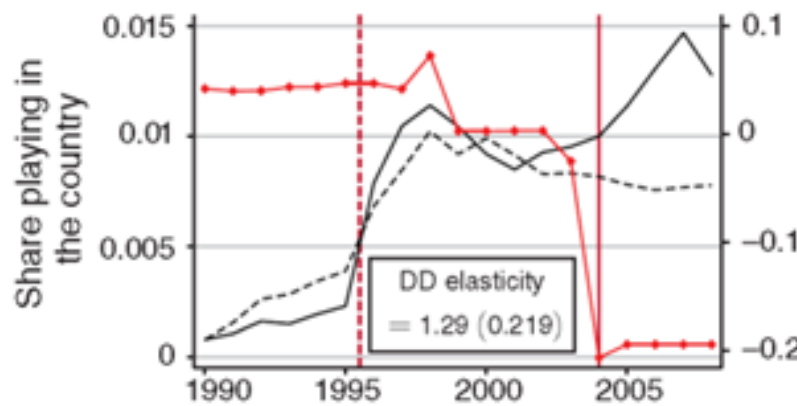
Panel A1. Top-quality players



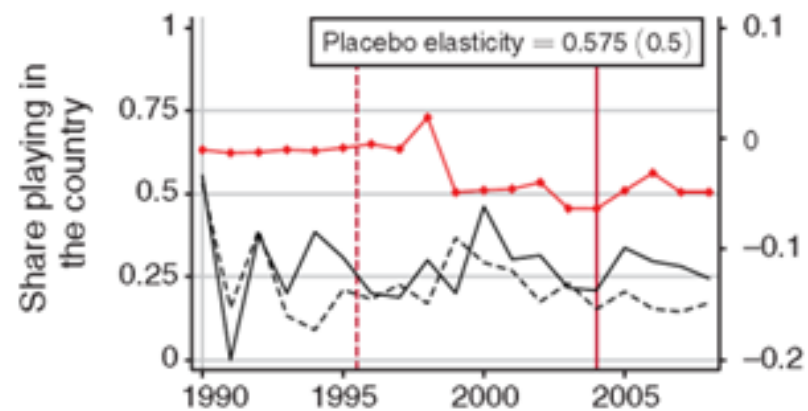
Panel A2. Lower-quality players



Panel B1. Eligible foreign players



Panel B2. Non-eligible foreign players



— Spain - - - Synthetic Spain -●- Δ Top tax rate

Kleven, Landais, Saez, and Schultz (QJE, 2013)

Some concerns with the above SCM approach

More internal valid evidence from a 1991 Danish tax scheme

- Higher earners (above 100K euros) taxed at flat rate 25% for three years (instead of regular top rate of 59%)

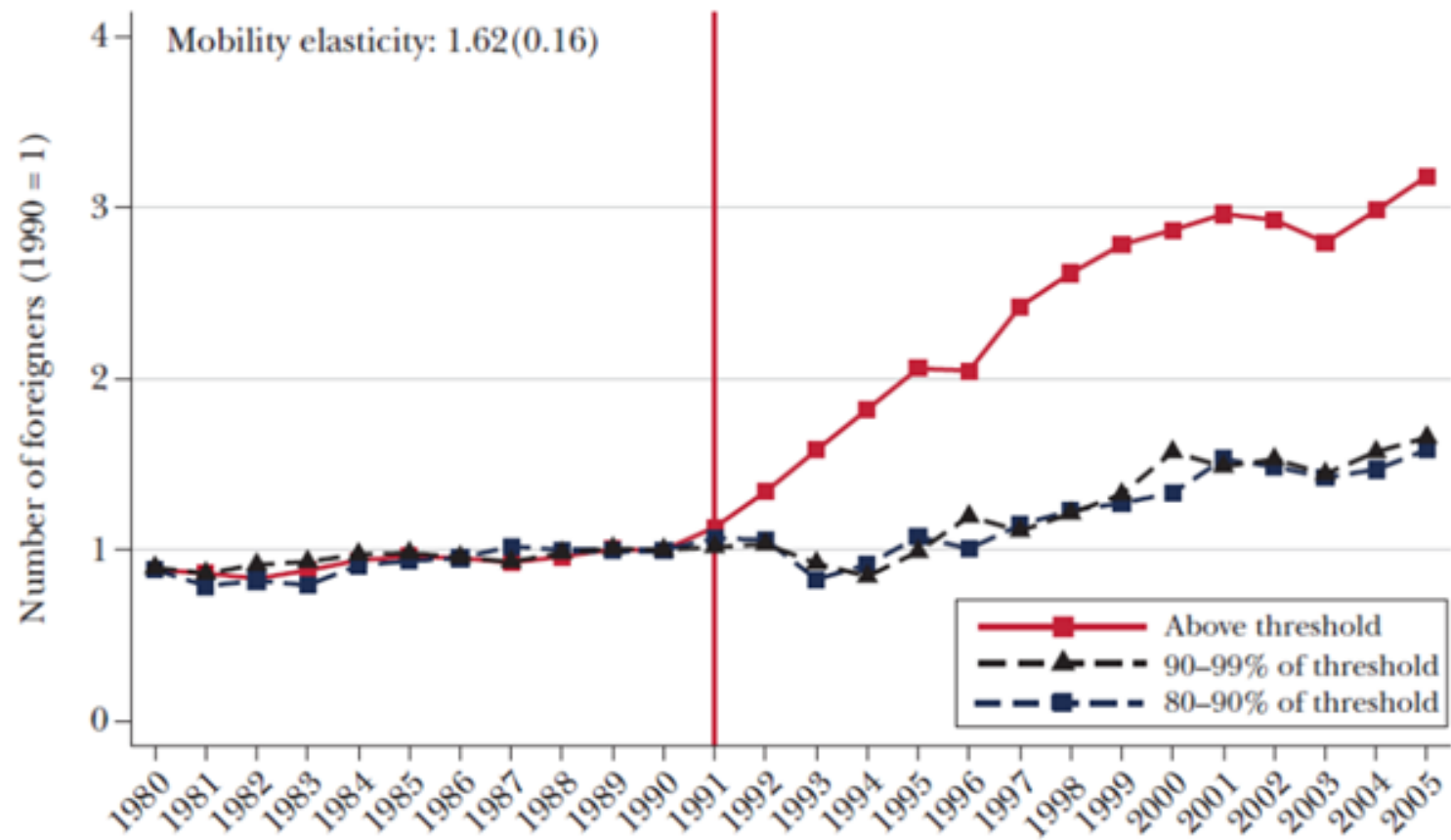
Data and methodology

- Exploit Danish admin data
- DD strategy (below/above threshold)

Results

- Scheme doubled the number of highly paid foreigners
- Very high elasticities (above 1)

⇒ Tax competition across countries will reduce ability to tax



SOURCE : Kleven, Landais, Saez and Schultz (2013), Fig. 1.