Adjust Me if I Can’t: The Effect of Firm Incentives on Labor Supply Responses to Taxes.

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Incentivizing Labor Supply

Various approaches:

- Subsidies to **workers** (e.g. EITC in USA)
- Subsidies to **firms** (e.g. payroll subsidies in France)
- Subsidies to **workers and firms** (e.g. mini-jobs in Germany)

**Standard view: statutory incidence unimportant**

- If wages adjust
- If workers and firms able to adjust hours
- $\Rightarrow$ Firms are unimportant
Motivation: Does the Statutory Incidence Matter?

Statutory incidence is important:

- If wages can’t adjust (e.g. b/c of minimum wage)
Motivation: Does the Statutory Incidence Matter?

Statutory incidence is important:

1. If wages can’t adjust (e.g. b/c of minimum wage)

2. If agents differ in ability to respond to taxes
   - **workers** suffer from adjustment costs, information frictions
     - want to respond but can’t $\Rightarrow$ weak response
   - **firms** face smaller frictions
     - taxes generate short-run incentives to hire tax-advantaged workers
     - long-run job offers cater to workers’ preferences
     - $\Rightarrow$ strong response
Wage Earnings in Germany in 2010

2010

- Exempt employees from payroll and income taxes
- Earnings must be less €400 per month

Mini-Jobs:
Wage Earnings in Germany in 2010

2010

Mini-Jobs:
- Exempt employees from payroll and income taxes
- Earnings must be less €400 per month
- Pay lower fringe benefits

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7.3 million workers have mini-jobs

In terms of **cumulative earnings**:

- Among working women
  - ≈ 24% hold mini-jobs
  - ≈ 19% age 26-59 hold mini-jobs

- Among working men
  - ≈ 12% hold mini-jobs
  - ≈ 6% age 26-59 hold mini-jobs

**No minimum wage in Germany (until 2015)**

- Industry-specific wages typically don’t apply to these workers
Mini-jobs Demographics
Share in Mini-Jobs relative to Overall Population

Workforce Composition: Women 2010

2x more

1

2x less

Age under 26
Age 26−40
Age 40−59
Age 60+
Firm \leq 10 empl
Firm 11−100 empl
Firm >101 empl
Not citizen
East Germany
No Vocational
Vocational Training
Higher Education
Mini-jobs Demographics
Share in Mini-Jobs relative to Overall Population

Workforce Composition: Men 2010

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Contributions

- Document strong intensive margin labor supply responses to income and payroll taxes (bunching approach)
  - Elasticity of earnings wrt net-of tax rate: women 0.2-0.37, men 0.09-0.25

- Show that statutory incidence is important in labor markets
  - Statutory incidence changes the distribution of jobs offered by firms

- Show firm incentives affect labor supply responses
  - Labor supply responses stronger when statutory incidence falls on firms
Literature Review

- **Labor supply response** to income and payroll taxes:

- **Importance of statutory incidence**:
  - **Ability to evade**: Slemrod (2008), Kopczuk et al. (2013), **Saliency**: Chetty et al. (2009) Slemrod (2008), Chetty et al. (2009), Kopczuk et al. (2013)

- **Firms’** influence on labor supply responses:
  - Chetty et al. (2011), Best (2014)

- **Mini-jobs**:
  - **LS responses**: Caliendo and Wrohlich (2010); **Fringe benefits**: Bachmann et al. (2012), Wippermann (2012)
1 Institutional setting: mini-jobs

2 Calculate earnings elasticities wrt net-of-tax rate
   - Use bunching method
   - Disregard frictions, firm incentives

3 Theoretical framework
   - Statutory incidence matters in presence of adjustment frictions

4 Evidence of firm incentives
   - Mini-jobs incur lower fringe benefits

5 Conclusion and Policy Implications
Institutional Setting
Mini-Jobs: 1999-2010

Requirements:

- **before 2003**: earnings ≤ €325 p/m and hours ≤ 15 h/w
  - threshold applies to combined earnings
- **after 2003**: earnings ≤ €400 p/m
  - allowed 1 mini-job in addition to regular job
  - otherwise, threshold applies to combined earnings

Taxes:

- no income tax
- no employee payroll tax
- **employer** payroll tax: 22%, ↑ 25% (2003), ↑ 30% (2006)
- same labor protections and rules apply
Regular Jobs: 1999-2010

**Income Taxes:**
- tax is due on the **entire** earnings
- no tax for singles (b/c too low earnings)
- a notch for married (b/c of joint taxation)
- on average: large tax notch for women, small for men

**Payroll Taxes:**
- **employer** pays $\approx 20\%$
- **employee** pays $\approx 20\%$
  - the **entire** earnings **before 2003** $\Rightarrow$ notch
  - part of earnings **after 2003** $\Rightarrow$ kink
Budget Constraint (before 2003) of Average Worker

Consumption $z - T(z)$

Notch:
- $\approx €65$ SS +
- $\approx €85$ women
- $\approx €30$ men

$\Delta MTR = 20\%$ SS +
- $\approx 25\%$ income tax women
- $\approx 9\%$ income tax men

no income tax

income tax at spouse’s top MTR

mini-jobs 325 regular jobs

breakdown by year breakdown by age
Budget Constraint (after 2003) of Average Worker

- **Consumption**: $z - T(z)$
- **Earnings**: $z$

**Notch:**
- $\approx €92$ women
- $\approx €30$ men

**Income Tax:**
- $\Delta MTR \approx 22-36\%$ SS +
- $\approx 24\%$ income tax women
- $\approx 8\%$ income tax men

**Breakdown by Year:**
- Mini-jobs
- Regular jobs

**Breakdown by Age:**
- Notch: $\approx e^{92}$ women
- Notch: $\approx e^{30}$ men

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Data: Integrated Labor Biographies (SIAB)

- 2% sample of wage-earners in Germany
- yearly earnings data
- demographics (age, education, location)
- establishment info (industry, size, median wage)
- years: 1999–2010

I focus on:
- 26-59 year olds
- who are holding a regular type of employment (no trainees, interns, etc.)
- aggregated wages across all employments in a given year
Females: Earnings Distribution in 2001

2001

monthly pay (in euros)

frequency

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Females: Earnings Distribution in 2002

monthly pay (in euros)

frequency

2002

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Females: Earnings Distribution in 2003

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Females: Earnings Distribution in 2004

2004

monthly pay (in euros)

frequency
Females: Earnings Distribution in 2005

2005

monthly pay (in euros)

frequency

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000

0 100000 200000 300000 400000 500000 600000 700000 800000 900000

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Females: Earnings Distribution in 2006

2006

monthly pay (in euros)

frequency

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Females: Earnings Distribution in 2007

2007
Females: Earnings Distribution in 2008

2008

monthly pay (in euros)

frequency

0
200
400
600
800
1,000
1,200
1,400
1,600
1,800
2,000

0
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
900,000

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Males: Earnings Distribution in 2000

The chart illustrates the distribution of male earnings in 2000. The x-axis represents monthly pay (in euros) ranging from 0 to 2,000, while the y-axis shows frequency ranging from 0 to 160,000. The data is presented in a graph with a linear scale for both axes. The earnings are distributed across various pay ranges, with higher concentrations in certain pay brackets.
Males: Earnings Distribution in 2001
Males: Earnings Distribution in 2002

![Graph showing the distribution of male earnings in 2002. The x-axis represents monthly pay (in euros), and the y-axis represents frequency. The graph displays a peak around the lower end of the pay scale, with a decline as pay increases.]
Males: Earnings Distribution in 2003

monthly pay (in euros)

frequency
Males: Earnings Distribution in 2004

2004

monthly pay (in euros)

frequency
Males: Earnings Distribution in 2006

2006

monthly pay (in euros)

frequency

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800

Firm Incentives and Labor Supply Responses to Taxes.
Elasticities of Earnings wrt Net-of-Tax Rate
Elasticity of Earnings: Assumptions

Assumptions:

1. Individuals do **not** value SS
2. **No** other changes at the threshold
   - e.g. fringe benefits
   - e.g. probability of promotion, termination, etc.
3. Individuals able to adjust hours freely
4. Smooth earnings distribution if taxes are flat

**Earnings elasticity represents**

- average elasticity at $\approx €325-400$ income level
- real labor response (no avoidance)
- lower bound b/c of assumptions #1-3
Suppose MTR increases from $t_1$ to $t_2$ above some threshold $K$:

\[
B_{kink} \approx e \cdot \frac{t_2 - t_1}{1 - t_1} \cdot K \cdot h(K)
\]

Saez (AEJ EP 2010):
Suppose individuals must pay $\Delta T$ above some threshold $K$:

$$B_{notch} \approx \sqrt{\frac{eK\Delta T}{(1 - t_1) \cdot h(K)}}$$

Kleven and Waseem (QJE 2013):

Missing mass = $B_{notch}$
Earnings Distribution: kink and notch

Combine Saez (AEJ EP 2010) and Kleven and Waseem (QJE 2013):

For earnings elasticity $e$,

- $B_{kink} \approx e \cdot \frac{t_2 - t_1}{1 - t_1} \cdot K \cdot h(K)$
- $B_{notch} \approx \sqrt{\frac{eK\Delta T}{(1 - t_1)}} \cdot h(K)$

missing mass = $B_{notch} < B_{total}$
Empirical Approach: Iterative Procedure

Methodological contribution: account for bunching due to the kink and due to the notch separately

- Start with elasticity guess: $e_0$
- Calculate $B_{kink}$ and $B_{notch}$ using $e_0, K, t_1, t_2, \Delta T$
- Calculate $\frac{B_{notch}}{B_{notch} + B_{kink}}$
- Fit polynomial until $\frac{B_{notch}}{B_{notch} + B_{kink}} \cdot B_{total} = \text{Missing Mass}$
  - excluding $[z_l, z_u]$ around the threshold $K$
  - $z_l$ is estimated visually: $\approx 3-5$ bins
  - $z_u$ is chosen iteratively: missing mass = bunching due to the notch
- Estimate elasticity $\hat{e}_0$, and update the guess
- Iterate until $e_j = \hat{e}_j$.
- Use bootstrap procedure to estimate standard errors (which accounts for both iterative processes)
Females: Counterfactual and Elasticity 1999

Excess mass $b = 8.15^{***}$

Elasticity $e = 0.27^{***}$

$\frac{B_{notch}}{B_{notch} + B_{kink}} \approx 75\%$

Monthly pay (in euros)
Estimates and Comparison To Previous Studies:

**Mini-Job**: $e = 0.20–0.37$ women, $e = 0.09–0.25$ men
Estimates and Comparison To Previous Studies:

**Mini-Job**: $e = 0.20–0.37$ women, $e = 0.09–0.25$ men

1. **Taxable Income Elasticities** (from “Bunching” studies)
   - **Estimates** $e < 0.08$
     - Saez (2010): EITC, $e = 0.003–0.025$, Chetty et al. (2011): Denmark, $e = 0.01–0.06$, Bastani and Selin (2014): Sweden, $e = 0.001$, Tazhitdinova (2015): UK, $e = 0.04–0.08$
     - Chetty et al. (QJE 2011): elasticities attenuated due to search costs

2. **Hour Elasticities**
   - **Estimates** $e \in (0.09, 0.44)$
     - Blundell, Duncan and Meghir (1998): UK, $e = 0.14$, Ziliak and Kniesner (1999): USA, $e = 0.15$, Eissa and Hoynes (2006): EITC, $e = 0.09-0.44$

Surprisingly strong response to Mini-job threshold.
Taxable Income Elasticity
Real Responses + Avoidance Opportunities

First Income Tax Bracket: Singles, 1998

25.9% kink
2 margins of response: earnings + deductions

Excess mass $b = 0.47^{***}$
$(0.0386)$

Elasticity $e = 0.09^{***}$
$(0.0071)$
Taxable Income Elasticity
Real Responses + Avoidance Opportunities

First Income Tax Bracket: Married, 1998

25.9% kink
2 margins of response: earnings + deductions

Excess mass $b = 1.03^{***}$
(0.1067)

Elasticity $e = 0.09^{***}$
(0.0096)

yearly taxable income (in euros)
Individuals with Multiple Jobs in 2004-2010
One Mini-job Allowed in Addition to Regular Job

Earnings in Secondary Job: 2004–2010

monthly earnings in each job (in euros)
frequency
Individuals with Multiple Jobs in 1999-2002
No Incentive to Bunch: Combined Earnings Subject to Threshold

Earnings in Secondary Job

- no reason to bunch: these individuals pay regular taxes!
Elasticities by Year: Singles

No Income Tax Notch: only SS kink

Excess mass $b = 3.61^{***}$
(0.4461)

Elasticity $e = 0.65^{***}$
(0.0982)

Singles: 2003–2005

no income tax notch
weaker incentives to bunch
elasticity 2x larger than women

monthly pay (in euros)

frequency

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Elasticities by Year: Singles

No Income Tax Notch: only SS kink

Excess mass $b = 3.30^{***}$

Elasticity $e = 0.60^{***}$

Singles: 2006–2010

no income tax notch
weaker incentives to bunch
elasticity 2x larger than women
Summary

So far:

- Elasticities are large
- Individuals with no incentives bunch too

Next steps:

- Understand firm incentives using a theoretical model
- Provide empirical evidence of incentives
Theoretical Model
Model Overview: extension of Chetty et al. (QJE 2011)

- **Firms:**
  - Max profits
  - Offer distribution of hours

- **Individuals:**
  - Max quasi-linear utility
  - Experience positive search costs
    - Draw a job at random
    - Accept or reject
    - If reject: pay search cost, draw new job

- Start with flat **taxes**, then compare 2 reforms:
  1. reduce **employee** tax below some threshold
  2. reduce **employer** tax below some threshold
Firms max profits:

\[ \Pi_i = p(L_{1i} + L_{2i}) - w_1 L_{1i} - w_2 L_{2i} - (\phi_1 w_1 L_{1i} + \phi_2 w_2 L_{2i}) \]

Assume \( \phi_1 < \phi_2 \)

\( \phi_1 \) and \( \phi_2 \): employer-paid taxes and fringe benefits
Firms max profits:

$$\Pi_i = p(L_{1i} + L_{2i}) - w_1 L_{1i} - w_2 L_{2i} - (\phi_1 w_1 L_{1i} + \phi_2 w_2 L_{2i})$$

- Assume $\phi_1 < \phi_2$
- $\phi_1$ and $\phi_2$: employer-paid taxes and fringe benefits
- FOC: $p = w_1 (1 + \phi_1)$ and $p = w_2 (1 + \phi_2)$
- Firms hire cheapest labor $\Rightarrow$ labor costs must equalize
- $w_1^* = \frac{p}{1+\phi_1}$ and $w_2^* = \frac{p}{1+\phi_2}$, note: $w_1 > w_2$
- Important: $w_1/w_2$ does not depend on employee-paid taxes $t_1$ and $t_2$
Labor Supply

- Individuals have zero search costs
- Maximize utility \( u(c, l) = c - \alpha^{-1/\varepsilon} \frac{l^{1+1/\varepsilon}}{1+1/\varepsilon} \),

- 2 types of jobs on the market:
  1. Mini-jobs: \( c = (1 - t_1)w_1l = \hat{w}_1l \) and \( \hat{w}_1l \leq \hat{K} \)
  2. Regular jobs: \( c = (1 - t_2)w_2l = \hat{w}_2l \)
- \( t_1 \) and \( t_2 \) are employee-paid taxes and other costs
Individuals have zero search costs

Maximize utility $u(c, l) = c - \alpha^{-1/\varepsilon} \frac{l^{1+1/\varepsilon}}{1+1/\varepsilon}$,

2 types of jobs on the market:
1. Mini-jobs: $c = (1 - t_1)w_1 l = \hat{w}_1 l$ and $\hat{w}_1 l \leq \hat{K}$
2. Regular jobs: $c = (1 - t_2)w_2 l = \hat{w}_2 l$

$t_1$ and $t_2$ are employee-paid taxes and other costs

Then as long as $\hat{w}_1 > \hat{w}_2$, desired labor supply is

$$l^* = \begin{cases} 
\alpha \hat{w}_1^\varepsilon & \text{if } \alpha < \alpha_1^* \\
\hat{K}/\hat{w}_1 & \text{if } \alpha_1^* \leq \alpha \leq \alpha_2^* \\
\alpha \hat{w}_2^\varepsilon & \text{if } \alpha > \alpha_2^*. 
\end{cases}$$

Bunching at the threshold
Search Process

Workers’ Preferred Outcome:

- $F^*$: the distribution of “ideal” hours $l^*$
- $\Rightarrow F^*$ is equilibrium distribution in frictionless model

Workers’ Search Process:

1. Firms offer distribution of hours $G$
2. Each individual draws a job at random from $G$
3. Accepts or rejects the draw
4. If rejects: draw a new offer from $G_{l^*}^{search}$ and accept
   - $G_{l^*}^{search}$ is a function of search costs $C$, ideal hours $l^*$, and distribution of offered hours $G$
Reform: Set $t_1 = 0$ or $\phi_1 = 0$

Suppose:

- Start with equal taxes: $1 - t_1 = \frac{1}{1+\phi_1} = 1 - t_2 = \frac{1}{1+\phi_2}$

  $\Rightarrow w_1^* = \frac{p}{1+\phi_1} = \frac{p}{1+\phi_2} = w_2^*$

- Government wants to set $t_1 = 0$ or $\phi_1 = 0$

Does it matter?
Reform: Set \( t = 0 \) or \( \phi = 0 \)

Suppose:

- Start with equal taxes: \( 1 - t_1 = \frac{1}{1+\phi_1} = 1 - t_2 = \frac{1}{1+\phi_2} \)

\[ \Rightarrow w_1^* = \frac{p}{1+\phi_1} = \frac{p}{1+\phi_2} = w_2^* \]

- Government wants to set \( t_1 = 0 \) or \( \phi_1 = 0 \)

Does it matter?

1. If individuals have zero search costs: **NO**
   
   - \( t_1 = 0 \Rightarrow \) after-tax wage \( \hat{w}_1^* = \frac{p}{1+\phi_1} \)
   - \( \phi_1 = 0 \Rightarrow \) after-tax wage \( \hat{w}_1^* = p \cdot (1 - t_1) \)
   - since \( \frac{1}{1+\phi_1} = (1 - t_1) \) same equilibrium outcome
Reform: Set $t_1 = 0$ or $\phi_1 = 0$

Suppose:

- Start with equal taxes: $1 - t_1 = \frac{1}{1+\phi_1} = 1 - t_2 = \frac{1}{1+\phi_2}$
- $w_1^* = \frac{p}{1+\phi_1} = \frac{p}{1+\phi_2} = w_2^*$

- Government wants to set $t_1 = 0$ or $\phi_1 = 0$

Does it matter?

1. If individuals have zero search costs: **NO**
   - $t_1 = 0 \Rightarrow$ after-tax wage $\hat{w}_1^* = \frac{p}{1+\phi_1}$
   - $\phi_1 = 0 \Rightarrow$ after-tax wage $\hat{w}_1^* = p \cdot (1 - t_1)$
   - since $\frac{1}{1+\phi_1} = (1 - t_1)$ same labor supply response

2. If individuals have positive search costs: **YES**
   - $t_1 = 0 \Rightarrow$ keeps wages constant
   - $\phi_1 = 0 \Rightarrow w_1^* \neq w_2^*$
   - $\Rightarrow$ different incentives for firms
Case 1: reduce employee tax below $K$

Employee tax: $0$
Employer tax: $\phi$
Market wage: $w_1 = w_2$

Employee tax: $t$
Employer tax: $\phi$
Market wage: $w_2$

Workers’ desired hours
Case 1: reduce employee tax below $K$

Firms’ offered hours

Workers’ desired hours

Density

employee tax: 0
employer tax: $\phi$
market wage: $w_1 = w_2$

employee tax: $t$
employer tax: $\phi$
market wage: $w_2$

Earnings
Case 1: employee-paid tax set to zero, \( t_1 = 0 \)

- From \( \phi_1 = \phi_2 \Rightarrow w_1^* = w_2^* \)
- Firms are indifferent
- Equilibrium distribution of hours must satisfy:

\[
G \text{ hours offered} = P(G|F^*) \cdot G + (1 - P(G|F^*)) \cdot G^{\text{search}}
\]

- If search costs are infinite \( \Rightarrow \) any \( G \) satisfies (1)
  b/c \( G^{\text{search}} = G \)
- If search costs are zero \( \Rightarrow \) only \( F^* \) satisfies (1)
  b/c \( G^{\text{search}} = F^* \)

\( \Rightarrow \) **Prediction**: Firms are indifferent between hiring type 1 and type 2 workers; **small labor response if search costs are high**
Case 2: reduce employer tax below $K$

Employee tax: $t$
Employer tax: 0
LR market wage: $w_1 > w_2$

Employee tax: $t$
Employer tax: $\phi$
LR market wage: $w_2$

Workers’ desired hours
Case 2: reduce employer tax below $K$

employee tax: $t$
employer tax: 0
LR market wage: $w_1 > w_2$

SR market wage: $w_1 = w_2$
(assuming some wage rigidity)

employee tax: $t$
employer tax: $\phi$
LR market wage: $w_2$

SR market wage: $w_2$

Firms’ offered hours
Workers’ desired hours

Density

Earnings
Case 2 Equilibrium Conditions

Case 2: employer-paid tax set to zero, $\phi_1 = 0$

- In the short run, all firms want to hire type 1 workers
- Since $\phi_1 < \phi_2 \Rightarrow w^*_1 > w^*_2$ in the long run
- Equilibrium distribution of hours must satisfy:

\[
\begin{align*}
(1) \quad \underbrace{G}_{\text{hours offered}} &= \underbrace{P(G|F)}_{\text{prob. accepted}} \cdot G + \underbrace{(1 - P(G|F))}_{\text{prob. rejected}} \cdot G^{\text{search}} \\
(2) \quad \int_0^{K/w_1^*} l \, dG &= \int_0^{K/w_1^*} l \, dF^* = L^S_1(w_1^*, w_2^*)
\end{align*}
\]

- $(2) \iff$ firms won’t pay higher wages unless labor supply at old wages is exhausted

$\Rightarrow$ Prediction: Firms will hire type 1 workers until wage $w_1$ adjusts upward; full labor responses regardless of search costs
Positive Search Costs: Summary of Predictions

Statutory incidence falls on

1 individuals: ⇒ small response
   ■ Workers want to respond but unable to b/c of search costs
   ■ Firms are indifferent and do not participate
   ■ Income tax kinks/notches fall into this category

2 firms: ⇒ large response
   ■ Firms have incentive to hire type 1 until wages adjust
   ⇒ Bunching even if individuals have search costs

3 Important: “taxes" should be interpreted broadly:
   ■ any difference in labor costs between workers matter:
     law-mandated benefits, union-regulated costs, etc
Summary

So far:

- Estimated elasticities are large
- Individuals with no incentives bunch too
- **Model prediction**: strong bunching if employer-paid costs differ for mini-jobs and regular jobs

Next steps:

- Show that employer-paid costs differ
  - fringe benefits are lower: vacation pay, bonuses, etc.
Firms’ Incentives
Applying Theoretical Model Results to Mini-Jobs

3 Channels:

1. **Lower wages (incidence effects):** employee-paid tax breaks passed through to the employer
   - implies gross $w_{\text{mini}} < w_{\text{part-time}}$
   - while net $w_{\text{mini}} > w_{\text{part-time}}$

2. **Lower fringe benefits:** e.g. bonus pay, vacation pay, sick day pay, etc.
   - implies gross $w_{\text{mini}} \geq w_{\text{part-time}}$

3. **Lower dismissal costs**
   - implies gross $w_{\text{mini}} \geq w_{\text{part-time}}$

Test these channels by comparing $w_{\text{mini}}$ to $w_{\text{part-time}}$
Two Datasets:

1. Firm Survey (VSE), 2006 and 2010
   - large size, reliable hour data
   - firm-provided Mini-Job identifiers
   - But: only firms with $\geq 10$ workers included

   - representative of the population, family structure info
   - But: small size, self-reported hours

Restrictions:

- age 16–80 years old
- working 1–45 hours per week
- gross wages $> p_{1}$ and $< p_{99}$
Hourly Gross Wage by Monthly Income
Firm Survey: subsample

Hourly Gross Wage

![Graph showing the relationship between hourly gross wage and monthly pay (in euros).](image-url)
Hourly Gross Wage by Monthly Income
Household Survey

Hourly Gross Wage

- mean
- 25th percentile
- 75th percentile

Firm Incentives and Labor Supply Responses to Taxes.
Hourly Gross Wage when earnings ∈ [€375, €500]

Firm Survey

Hourly Gross Wage

- mini-jobs
- regular jobs

percent

gross wage

3 5 7 9 11 13 15 17 19 21+

3 5 7 9 11 13 15 17 19 21+

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Firm Incentives and Labor Supply Responses to Taxes.
Weekly Hours when earnings ∈ [€375, €500]

Firm Survey

Weekly Hours

- **mini-jobs**
- **regular jobs**

Weekly Hours

- hours per week
- percent

The bar chart shows the distribution of weekly hours for mini-jobs and regular jobs within the earnings range of €375 to €500. The hours are grouped into categories: 5, 10, 15, 20, 25, 30, and 30+ hours per week. The chart indicates that a significant portion of workers in mini-jobs work 15 hours per week, while regular jobs show a more spread distribution. The percentages are represented on the y-axis, and the x-axis shows the hours per week.

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Yearly Bonus by Monthly Income

Firm Survey

Yearly Bonus

monthly pay (in euros)

yearly bonus (in euros)

25th percentile
mean
75th percentile
FT-Equivalent Vacation Days by Monthly Income

Firm Survey

Vacation Days per Year

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Approach: compare $w_{\text{mini}}$ to $w_{\text{part-time}}$

- Ideally regress:
  \[
  \log(w_{if}) = \alpha_0 + \beta_0 \cdot \text{Mini}_{if} + X'_i \cdot \gamma + F'_f \cdot \theta + u_i,
  \]

- $w_{if}$ hourly gross, posted or net wage of individual $i$ working at establishment $f$,

- $\text{Mini}_{if}$: 1 if a mini-job,

- $X$: vector of individual controls,

- $F$: vector of firm controls (e.g. firm fixed effects)

- Because can’t control for ability/etc, regress:
  \[
  \log(w_{if}) = \alpha_0 + \beta_0 \cdot \text{Mini}_{if} + \alpha_1 \cdot D_{if} + \alpha_2 \cdot D_{if}^2 + \beta_1 \cdot D_{if} \cdot \text{Mini}_{if} + \beta_2 \cdot D_{if}^2 \cdot \text{Mini}_{if} + X'_i \cdot \gamma + F'_f \cdot \theta + u_i,
  \]

- $D_{if} \equiv (Y_{if} - K)/K$: percent difference between individual’s income $Y_{if}$ and the mini-job threshold $K$
## Results (Business Survey)

### Monthly Income €375–€500 vs Monthly Income €50–€1500

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Alisa Tazhitdinova
Firm Incentives and Labor Supply Responses to Taxes.
### Monthly Income €375–€500

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### Monthly Income €50–€1500

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### Dependent Variable: Log(Hourly Gross Wage incl. Bonus and Vacation Pay)

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<td>(0.007)</td>
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Firm FE: Yes
Individual Controls: Yes
Firm Controls: Yes
Linear Wage Trend: Yes
Quadratic Wage Trend: Yes
Number of Observations: 107,239
## Results (Household Survey)

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<td>0.083**</td>
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<td>(0.038)</td>
<td>(0.033)</td>
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<td>Indiv_Notch</td>
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<td>(0.033)</td>
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<td>Dependent Variable: Log(Hourly Net Wage)</td>
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<td>0.074**</td>
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<td>(0.038)</td>
<td>(0.033)</td>
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| Year Effects                               | Yes                     | Yes                     | Yes                     | Yes                     | Yes                     |
| Indiv. Controls (subset)                   | No                      | Yes                     | No                      | No                      | No                      |
| Indiv. Controls (full)                     | No                      | No                      | Yes                     | No                      | Yes                     |
| Firm Controls                              | No                      | Yes                     | Yes                     | No                      | Yes                     |
| Linear Wage Trend                          | No                      | No                      | No                      | Yes                     | Yes                     |
| Quadratic Wage Trend                       | No                      | No                      | No                      | No                      | Yes                     |
| Number of Observations                     | 3,373                   | 3,357                   | 3,020                   | 20,581                  | 18,889                  |
## Interactions with Mini-Job (Business Survey)

### Monthly Income €375–€500

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<tr>
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### Monthly Income €50–€1500

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**Dependent Variable: Log(Hourly Gross Wage)**

Alisa Tazhitdinova

**Firm Incentives and Labor Supply Responses to Taxes.**
### Robustness Checks (Business Survey)

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Alisa Tazhitdinova
Firm Incentives and Labor Supply Responses to Taxes.
Robustness Checks (Household Survey)

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At the threshold, **gross** wages are $\approx 6\%$ higher for mini-job workers.

**Posted** wages are approximately equal.

Bonus payments and vacation lower for mini-job workers.

$\Rightarrow$ Mini-jobs incur **lower fringe benefit payments**.

In line with survey evidence (Bachmann et al. (2012) and Weinkopf (2014)) that shows that mini-job workers do not receive:

- sick day pay
- statutory holiday pay
- maternity/paternity pay
- free company training
- vacation day pay
- bonuses
Maybe mini-jobbers are easier to fire?

Unlikely to be the driving force:

- Mini-jobbers’ hours are bound by the threshold
  - Large proportion of mini-job workers are at the threshold
- Part-time workers more flexible
- Termination laws do not apply in the first 6 months

- Sorenson (2015) finds that mini-jobbers are less likely to be laid off than low-paid part-time workers

- I show evidence that mini-jobbers stay longer at firms
CDF of Employment Duration by Job Type

percent

duration of employment with the same establishment (in years)

Firm Incentives and Labor Supply Responses to Taxes.

Alisa Tazhiltdinova
Connection to Elasticities

1. Mini-jobs incur lower fringe benefits
   - Mini-jobs are attractive to firms in the short run because wages don’t adjust instanteniously

2. Theory: strong response when employer costs differ
   - Firms’ offers reflect workers’ preferences more closely

   Together 1 and 2 ⇒ large bunching at the mini-job threshold

3. Find large responses to the mini-job kink/notch
   - Elasticity estimates: 0.20–0.37 women, 0.09–0.25 men
Mini-jobs and regular jobs differ in
- fringe benefits and wages paid
⇒ assumption #2 is violated

How does this affect elasticity estimation?

- If individuals value fringe benefits actuarially fairly:
  - plausible: mostly monetary benefits: vacation pay, bonuses, sick day pay
  - Elasticity estimates are correct

- If individuals don’t value fringe benefits
  - additional kink at the threshold \( \approx 6\% \)
  - elasticities are slightly overestimated (by \( \approx 0.03 \))
Summary and Policy Implications
Policy Implications

Statutory incidence should fall on:

- **individuals to reduce distortions**
  - current income tax approach is correct
  - EITC approach is better than Mini-jobs b/c no excessive bunching at the plateau
  - ACA “30h rule” likely to be very distortionary

- **firms to maximize short-run utility**
  - In principle, people enjoy higher utility when they optimize

- **firms to incentivize job creation**
  - Immediate incentive to hire workers vs. long run equilibrium effects
Conclusion

- Statutory incidence of taxes is important in presence of search costs
  - Statutory incidence changes the distribution of hours offered by firms

- Firm incentives affect labor supply responses to taxes
  - Responses are stronger with statutory incidence falls on firms

- Document strong response to a mini-job threshold in Germany
  - Policy leads to a large number of workers in at-the-threshold jobs
Appendix
**Bunching-due-to-the-notch formula:** From the definition of marginal tax rate follows that a notch of size $\Delta T$ can be approximated as MTR increase from $t_1$ to $\hat{t}_3$, defined as

$$\hat{t}_3 \approx \frac{[\Delta T + t_1K + t_1\Delta z_{\text{notch}}] - [t_1K]}{\Delta z_{\text{notch}}} = t_1 + \frac{\Delta T}{\Delta z_{\text{notch}}}.$$ 

Then $B_{\text{notch}} \approx \Delta z_{\text{notch}} \cdot h(K)$, where $\Delta z_{\text{notch}}$ solves

$$e = \frac{\Delta z_{\text{notch}}/K}{(t_1 + \Delta T/\Delta z_{\text{notch}} - t_1)/(1 - t_1)}.$$ 

Solving for $\Delta z_{\text{notch}}$ and substituting gives

$$B_{\text{notch}} \approx \Delta z_{\text{notch}} \cdot h(K) = \sqrt{\frac{eK\Delta T}{(1 - t_1)} \cdot h(K)}.$$
Notches and Kinks at the Mini-Job Threshold

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Source: SOEP. This table shows the amount of social security and income tax a person has to pay immediately upon crossing the mini job threshold and a percentage change in MTR.

Alisa Tazhitdinova
Firm Incentives and Labor Supply Responses to Taxes.
## Notches and Kinks at the Mini-Job Threshold

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</table>

Source: SOEP. This table shows the amount of social security and income tax a person has to pay immediately upon crossing the mini job threshold and a percentage change in MTR.