Unemployment Insurance, Disability Insurance, and Workers' Compensation

131 Undergraduate Public Economics

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INSTITUTIONAL FEATURES

Unemployment insurance, workers' compensation, and disability insurance are three social insurance programs in the United States, and they share many common features.

Unemployment insurance (UI): A federally mandated, state-run program in which payroll taxes are used to pay benefits to unemployed workers laid off by companies.

Disability insurance (DI): A federal program in which a portion of the Social Security payroll tax is used to pay benefits to workers who have suffered a medical impairment that leaves them permanently unable to work.

Workers' compensation (WC): State-mandated insurance, which firms generally buy from private insurers, that pays for medical costs and lost wages associated with an on-the-job injury.

Comparison of the Features of UI, DI, and WC

Characteristic	UI	DI	WC
Qualifying Event	Job loss, job search	Disability	On-the-job injury
Duration	26-65 weeks	Indefinite	Indefinite (if verified)
Difficulty of verification	Job loss: easy Search: impossible	Somewhat difficult	Very difficult
Average after tax replacement rate	47%	60%	89%
Variation across states	Benefits and other rules	Only disability determination	Benefits and other rules

Unemployment Insurance

Unemployment insurance is a major social insurance program in the U.S.

Spending size: \$50bn/year in normal times (up to \$150bn/year during Great Recession, around \$800bn from March 2020 to Sept 2021 due to COVID)

Macroeconomic importance in stabilization/stimulus

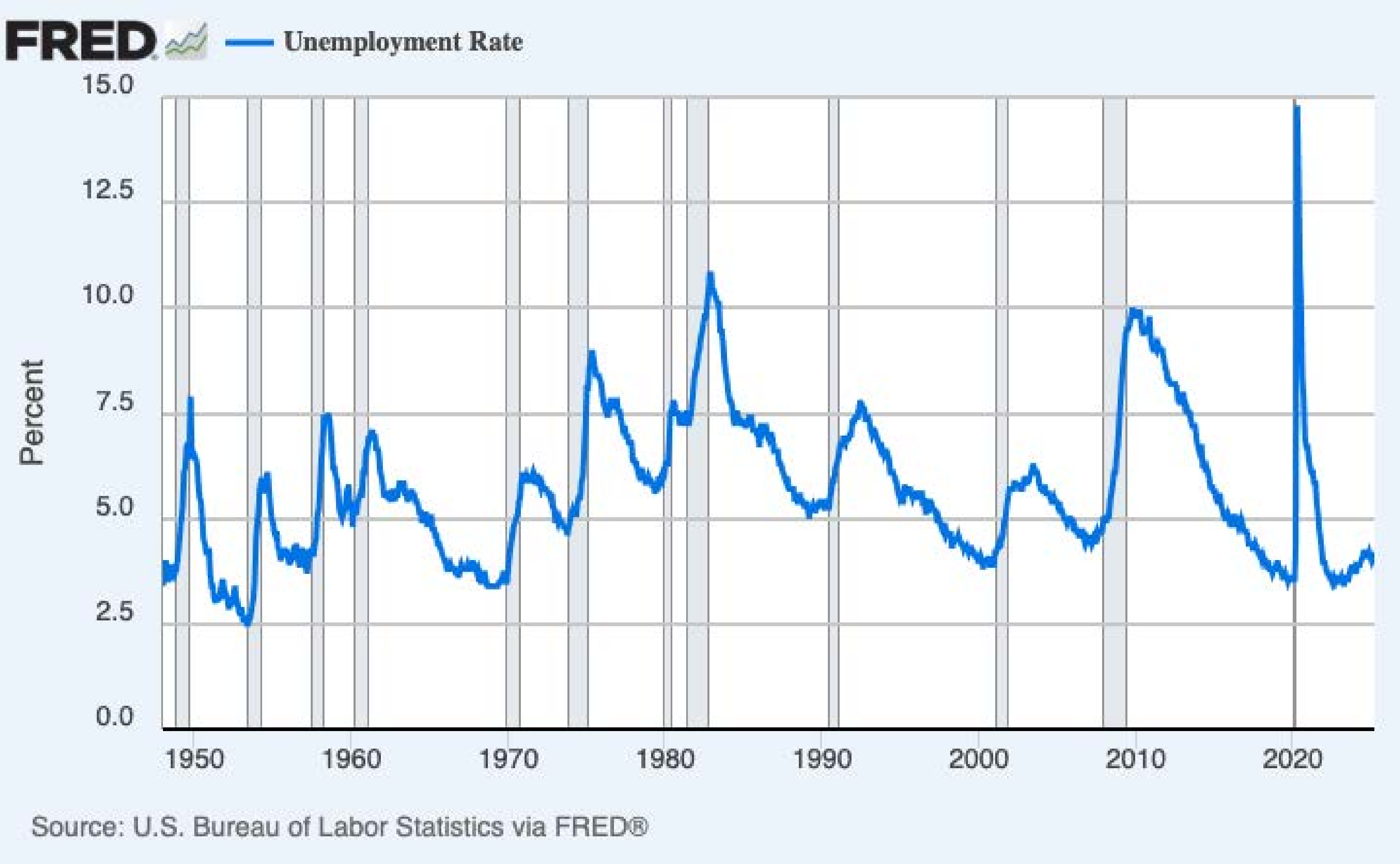
Like other social programs, triggered by an event

In this case, involuntary job loss

Controversial debate about unemployment benefits

Benefit: helps people in a time of need

Cost: reduces incentive to search for work while unemployed


FRED
Unemployment Rate
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Percent
1950
1960
1970
1980
1990
2000
2010
2020
Source: U.S. Bureau of Labor Statistics via FRED®

Institutional Features of Unemployment Insurance

UI is a federally mandated, state-run program

Although UI is federally-mandated, each state sets its own parameters on the program.

This creates a great deal of variation across states

Useful as a "laboratory" for empirical work

$\Rightarrow$ UI is a heavily studied program

In 2020 crisis, most state systems unable to cope with volume and new expanded rules $\Rightarrow$ Weakness of decentralized system

Financing of UI Benefits

1) UI is financed through a payroll tax on employers:

$\Rightarrow$ an employee will not see a deduction for UI on his or her paycheck.

This payroll tax averages 1-2% of earnings

2) UI is partially experience-rated on firms

$\Rightarrow$ the tax that finances the UI program rises as firms have more layoffs, but not on a one-for-one basis

$\Rightarrow$ Industries with few layoffs (e.g. education) end up subsidizing some industries with many layoffs (e.g. construction)

Eligibility Requirements and Benefits

1) Individuals must have earned a minimum amount over the previous year.

2) Unemployment spell must be a result of a layoff, rather than from quitting or getting fired for cause (easy to check)

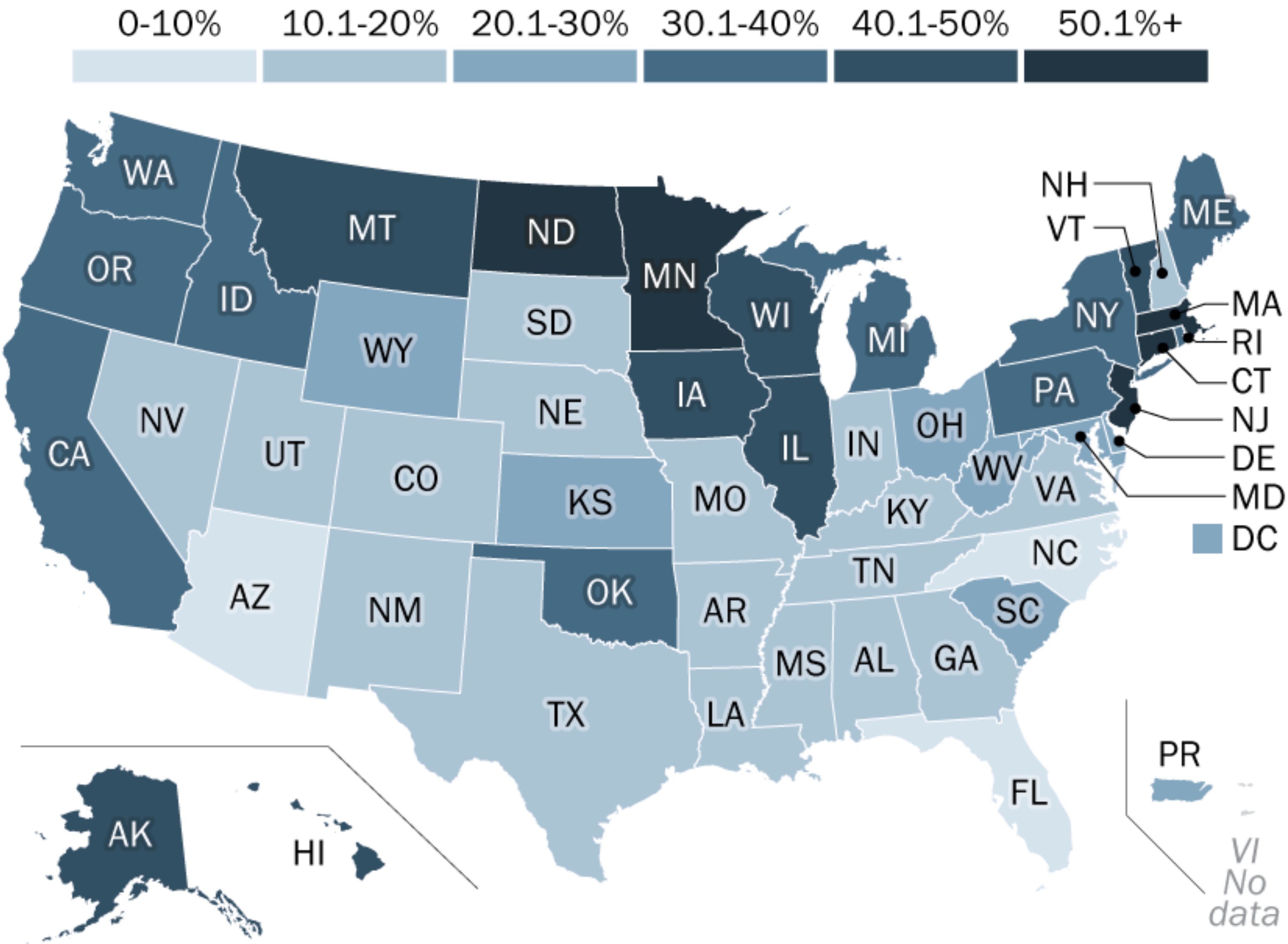
3) Individual must be actively seeking work and willing to accept a job comparable to the one lost (hard to check)

These eligibility requirements mean that not all of the unemployed actually collect benefits.

Even among eligible, 50% do not takeup the UI benefit (Lack of information about eligibility, stigma from collecting a government handout, or transaction costs)

Take-up typically lower in good times and depends on how hard states make enrollment (e.g. Florida makes it hard)

Share of state's unemployed workers receiving unemployment benefits, March 2020



UI Benefits

UI benefits are a function of previous earnings

These benefits vary by state.

The replacement rate is the amount of previous earnings that is replaced by the UI system.

$R = B/W$

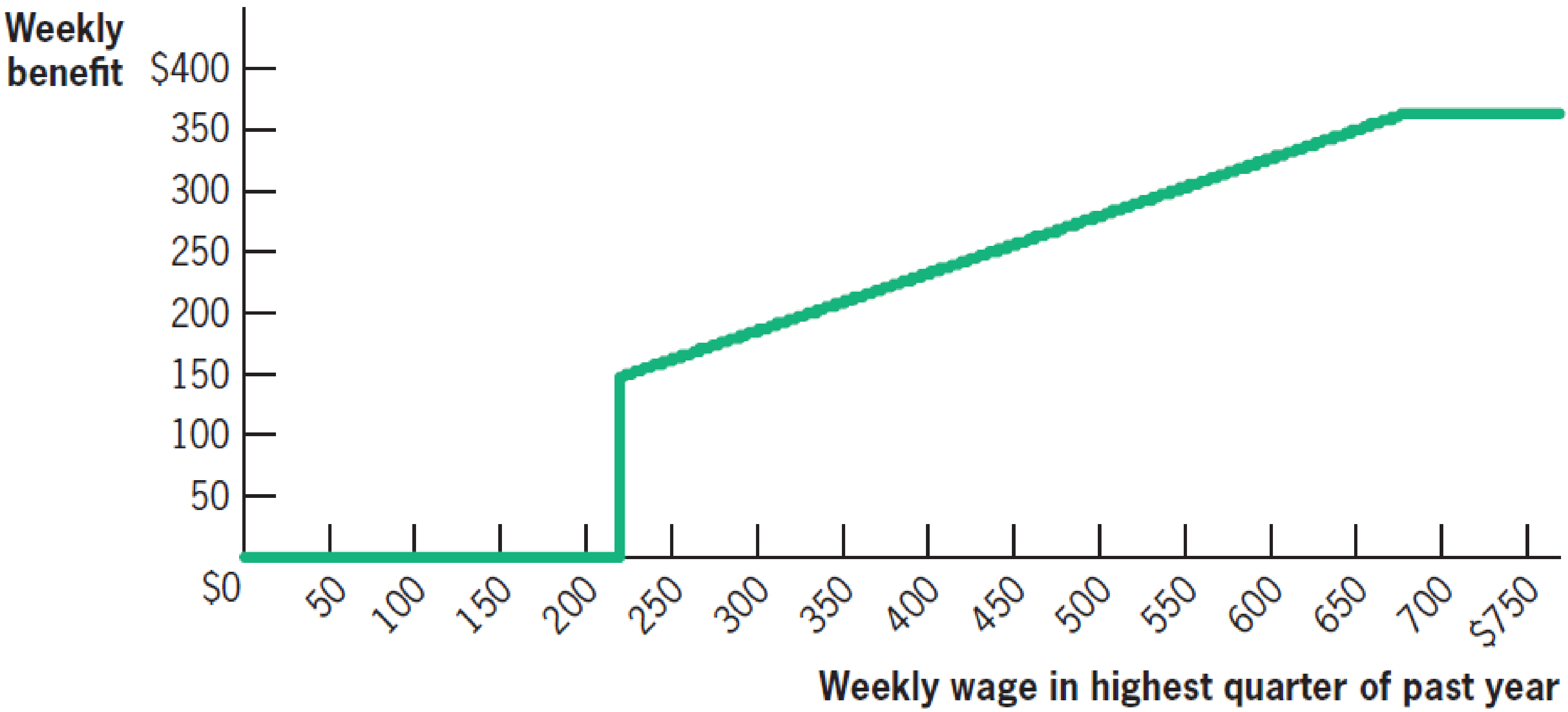
Replacement rates vary from 35% to 55% of earnings

In 2020 coronavirus crisis, CARES increased weekly benefits by $600 across the board for 4 months, and expands eligibility to self-employed and lower earners (+$300 in Jan-Sep 2021)

Average UI benefit jumped up from $400 to $1000/week. Person on $15/hour wage making $600/week made more on UI. Uniform $600/week done bc of admin simplicity

14.1

Unemployment Benefit Schedule for Michigan



UI Benefits Duration

In general, one can collect UI for 6 months.

In recessions, benefits are automatically extended to 9 months or 12 months

In deep recessions, benefits can be further extended (23 months in 2008-13)

In 2020 COVID crisis, UI extended to Sept 2021 for all the unemployed (including the previously self-employed).

EU countries tend to have more generous and longer benefits

Analysis of Optimal Unemployment Insurance

Optimal UI trades-off insurance value vs. efficiency costs

In principle, provide full insurance (perfect consumption smoothing) with 100% replacement rate if there is no moral hazard

With moral hazard, 100% replacement rate would eliminate incentives to find a job

$\Rightarrow$ Optimal replacement rate should be less than 100%

Optimal replacement rate depends negatively on the size of moral hazard and positively on how much people value insurance

Empirical work examines size of moral hazard and value of UI for consumption smoothing

Empirical Estimation of Effects of UI

Moral hazard in UI manifests itself in the duration of the unemployment spell

Economists ask whether the unemployed find jobs more slowly when benefits are higher

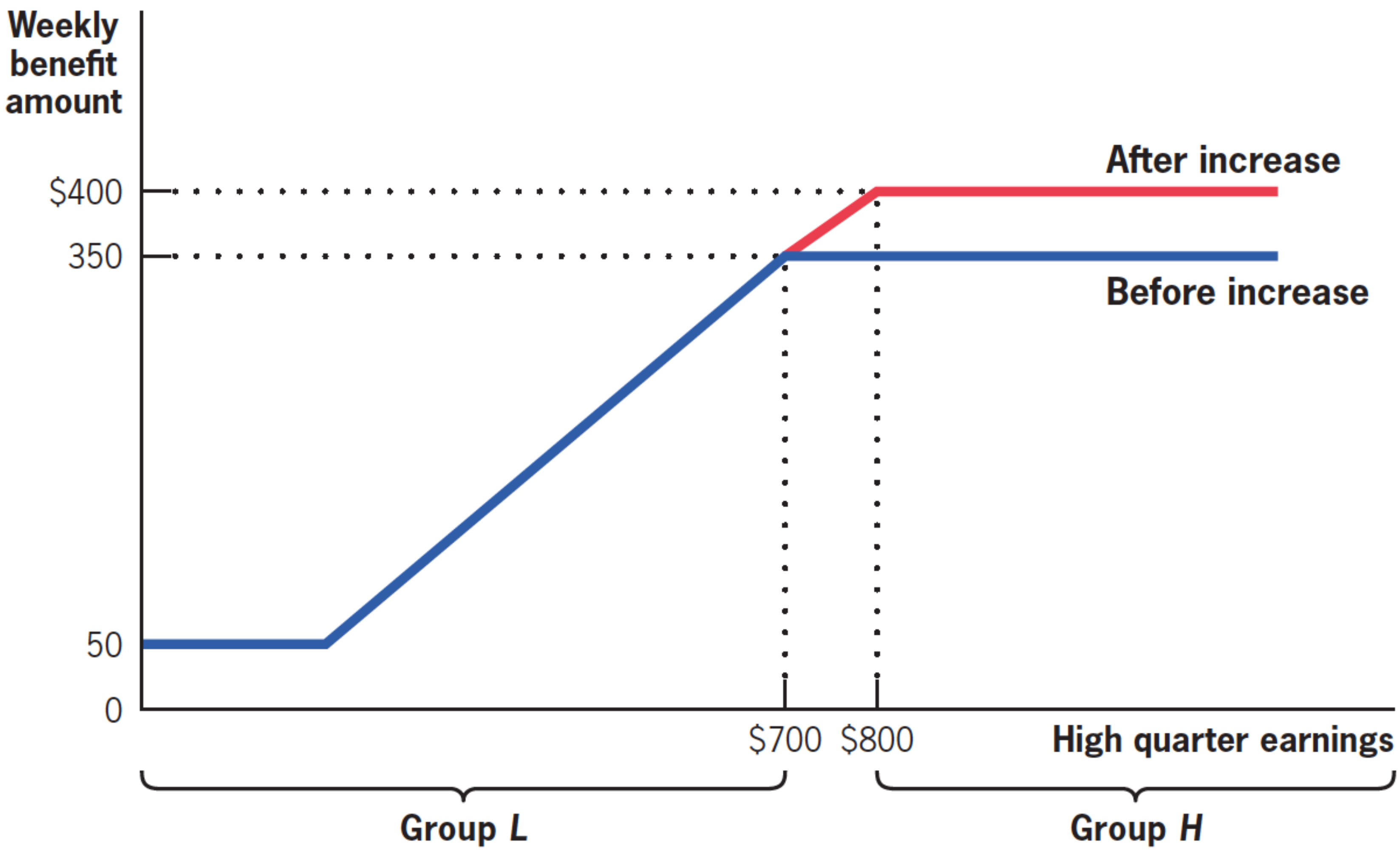
Key challenge: need to use quasi-experiments to identify these effects

One common empirical approach (Meyer 1990): difference-in-difference

Exploit changes in UI laws that affect a "treatment" group and compare to a "control" group

14.3

EVIDENCE: Moral Hazard Effects of Unemployment Insurance



Empirical Estimation of Effects of UI: Evidence

Meyer (1990) and many other implement this method using data on unemployment durations in the U.S. and state-level reforms

General finding: benefit elasticity of 0.4-0.6

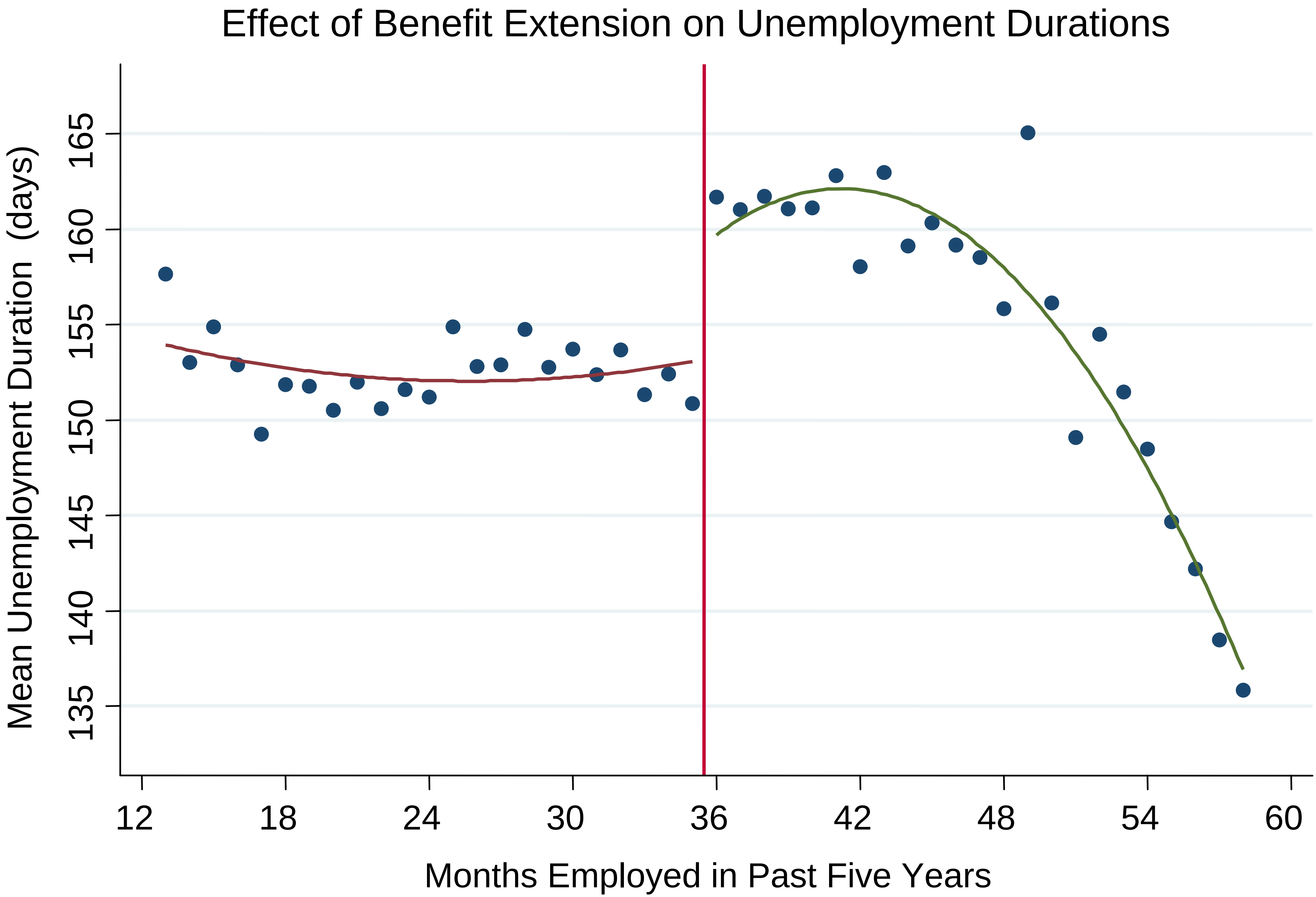
10% rise in unemployment benefits leads to about a 4-6% increase in unemployment durations.

More recent empirical approach: **regression discontinuity**

Card-Chetty-Weber (2007) use the fact that in Austria, you get up to 30 weeks of benefits when you have been employed for 36+ months in last 5 years (instead of up to 20 weeks)

Can look at duration of unemployment based on how long you have worked in last 5 years $\Rightarrow$ Finds somewhat smaller elasticity around 0.3

Card, Chetty, Weber (2007)



Effects of UI expansion during COVID

Ganong et al. (2021) analyze the impact of the huge UI expansion during COVID using JP Morgan bank data

They find that weekly exit rate from UI to new job:

a) jumps up from 1.8% to 2.6% when $600 supplement ends

b) jumps down from 2.6% to 2.0% when $300 suppl. starts

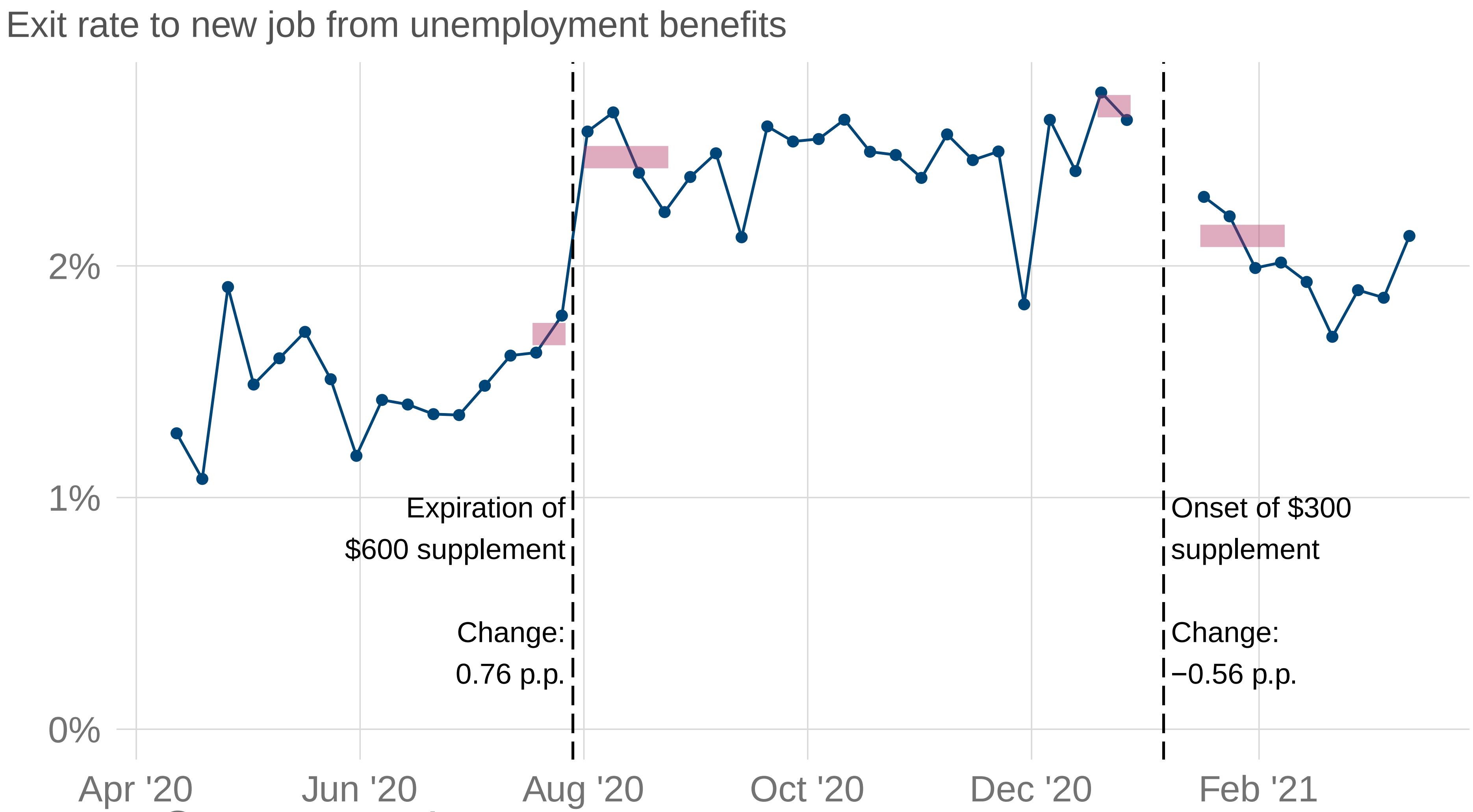
$\Rightarrow$ Negative moral hazard effects of UI

But quantitative effect is very small, indeed almost invisible in time series of fall of unemployment rate during recovery

$\Rightarrow$ UI was an efficient way to help job losers during COVID

Figure 2: Effect of Expanded Benefits on Job-Finding: Interrupted Timeseries Design

(a) Interrupted Timeseries Estimate



Source: Ganong et al. 2021

Evidence on Consumption-Smoothing

Difference-in-difference strategy has been used to examine how UI benefits affects consumption

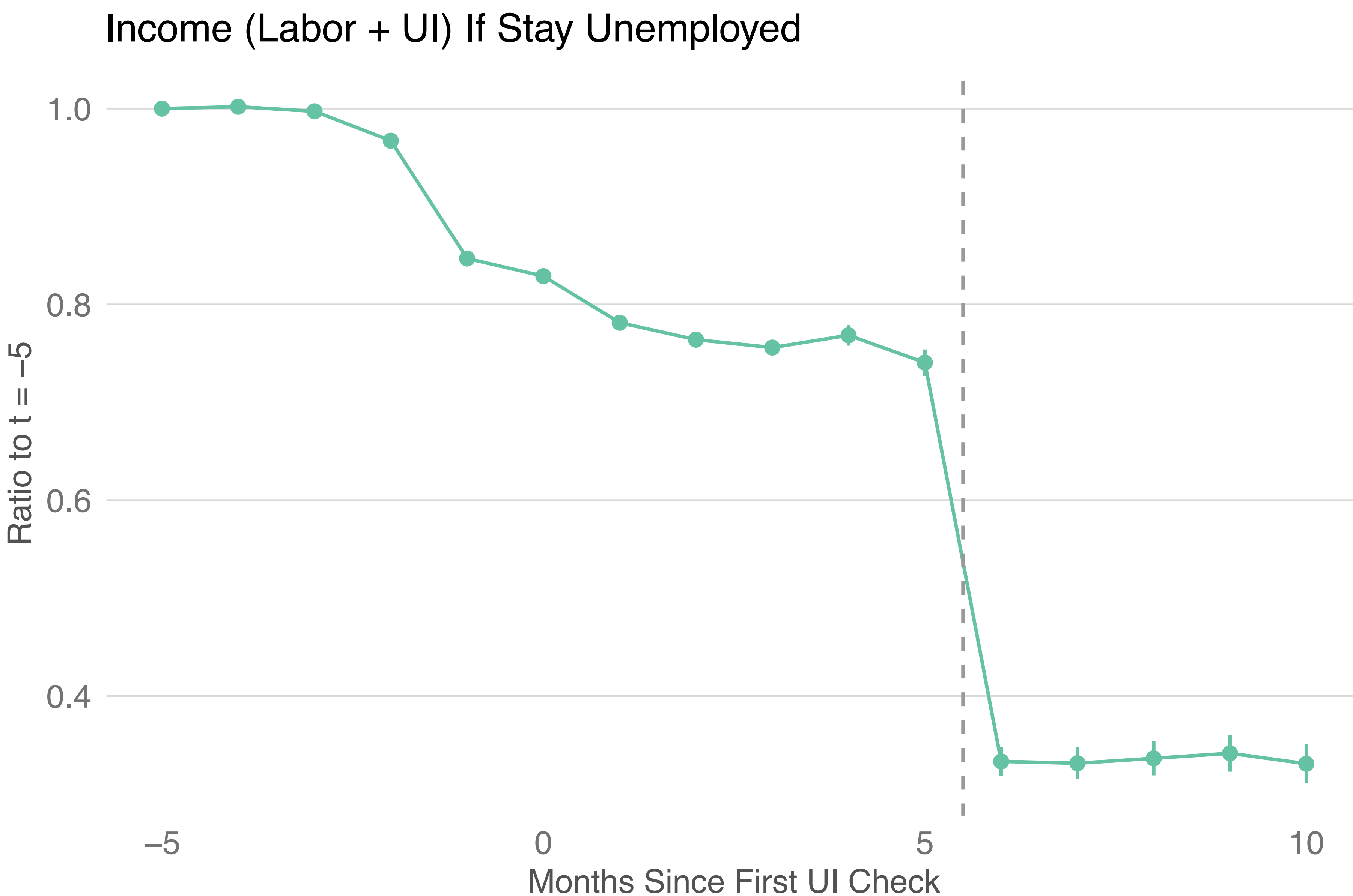
Gruber (1997) finds that consumption falls on average when people lose their job by about 10-15%

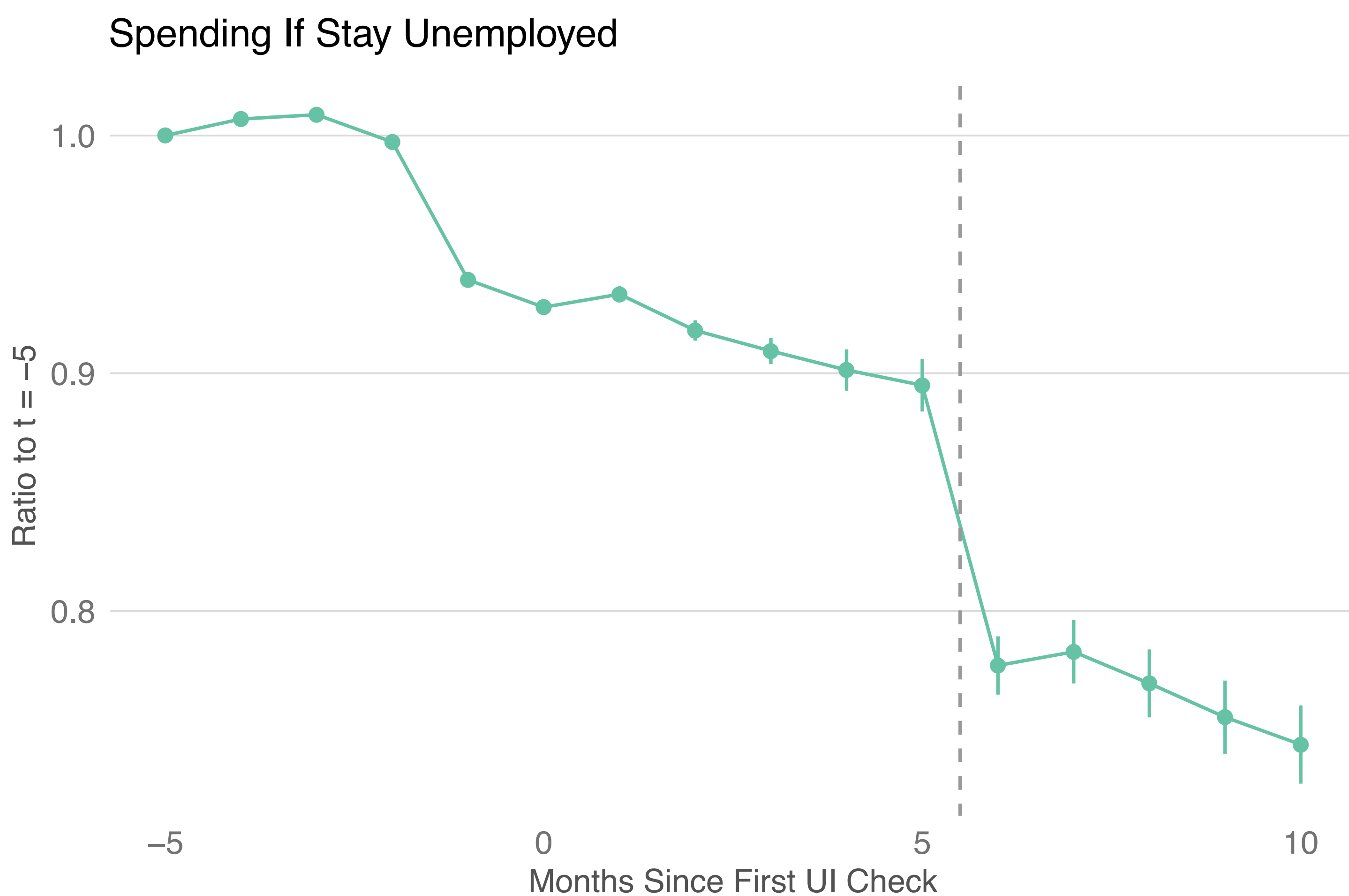
$1 increase in UI benefits increases consumption by 30 cents

Much less than 1-1 because savings behavior changes, spousal labor supply, borrowing from friends, etc. (this is called self-insurance)

Recent study by Ganong-Noel AER'19 uses bank account data to follow people through UI spell $\Rightarrow$ Finds big effects of UI benefit exhaustion on consumption especially for groups with high replacement rates or low wealth

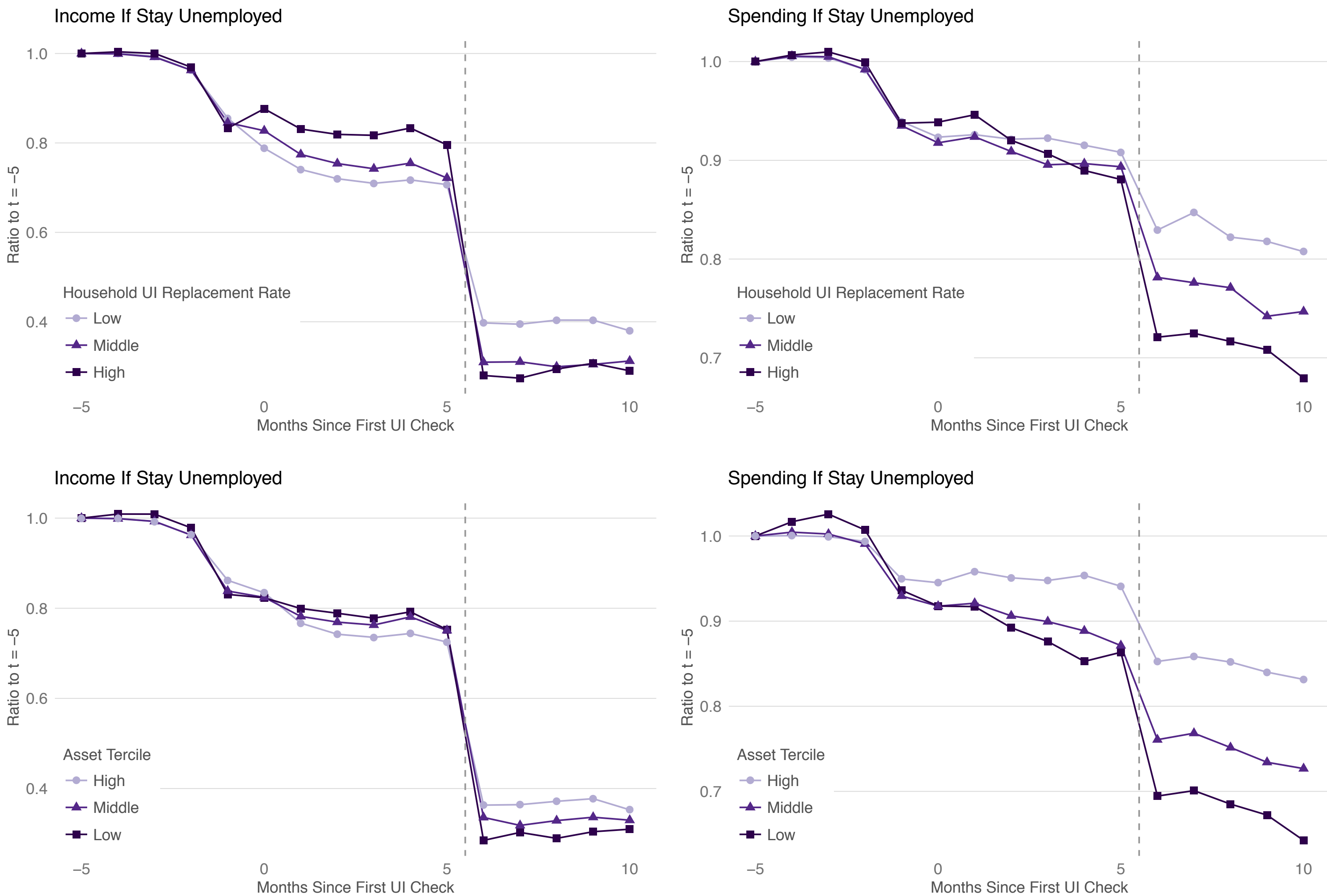
Figure 2: Income and Spending If Stay Unemployed





Notes: This figure plots income and spending for the sample that stays unemployed. In months $t = \{-5, -4, -3, -2, -1, 0\}$, this includes everyone who receives UI at date 0 and meets the sampling criteria described in Section 2.1. In month $t = 1$, this includes only households who continue to receive UI and excludes households who receive their last UI check in month 0. In month $t = 2$, this excludes households who receive their last UI check in month 0 or month 1, and so on. Employment status after UI exhaustion is measured using paycheck deposits. The vertical line marks UI benefit exhaustion. Income is positive after UI benefit exhaustion because of labor income of other household members. Vertical lines denote 95 percent confidence intervals for change from the prior month. See Section 3.1.1 for details.

Figure 3: Heterogeneity in Income and Spending If Stay Unemployed



Notes: This figure shows heterogeneity in income and spending by the ratio of UI benefits to estimated household annual income and the ratio of estimated total liquid assets (a measure described in Section 2.2) to consumption prior to the onset of unemployment. The sample is households that receive UI and stay unemployed, as described in the note to Figure 2.

Does UI have Long-Term Benefits?

Another potential benefit of UI, neglected in simple model above: improvements in **match quality**

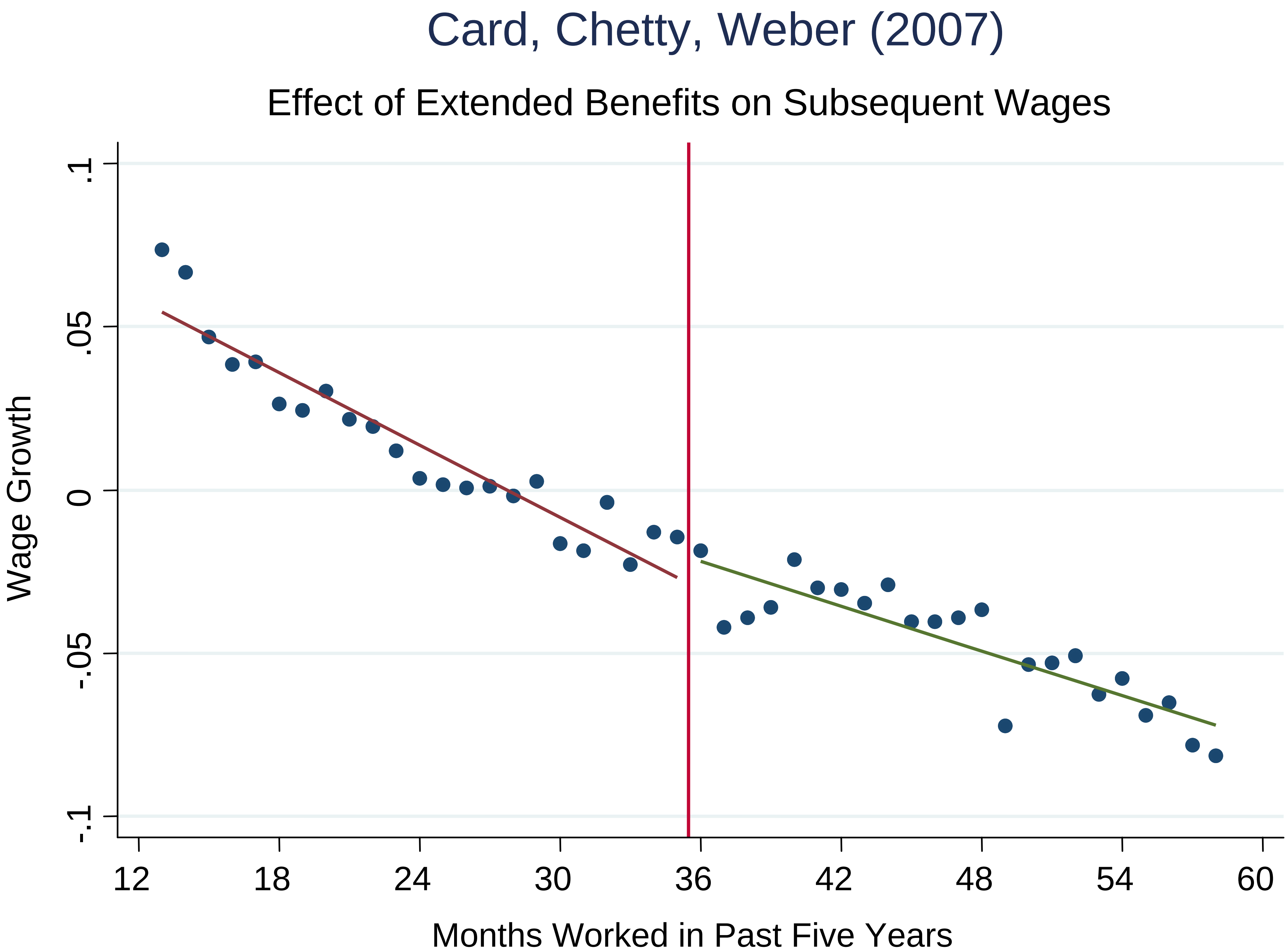
Are people forced to take worse jobs because they have to rush back to work to put food on the table?

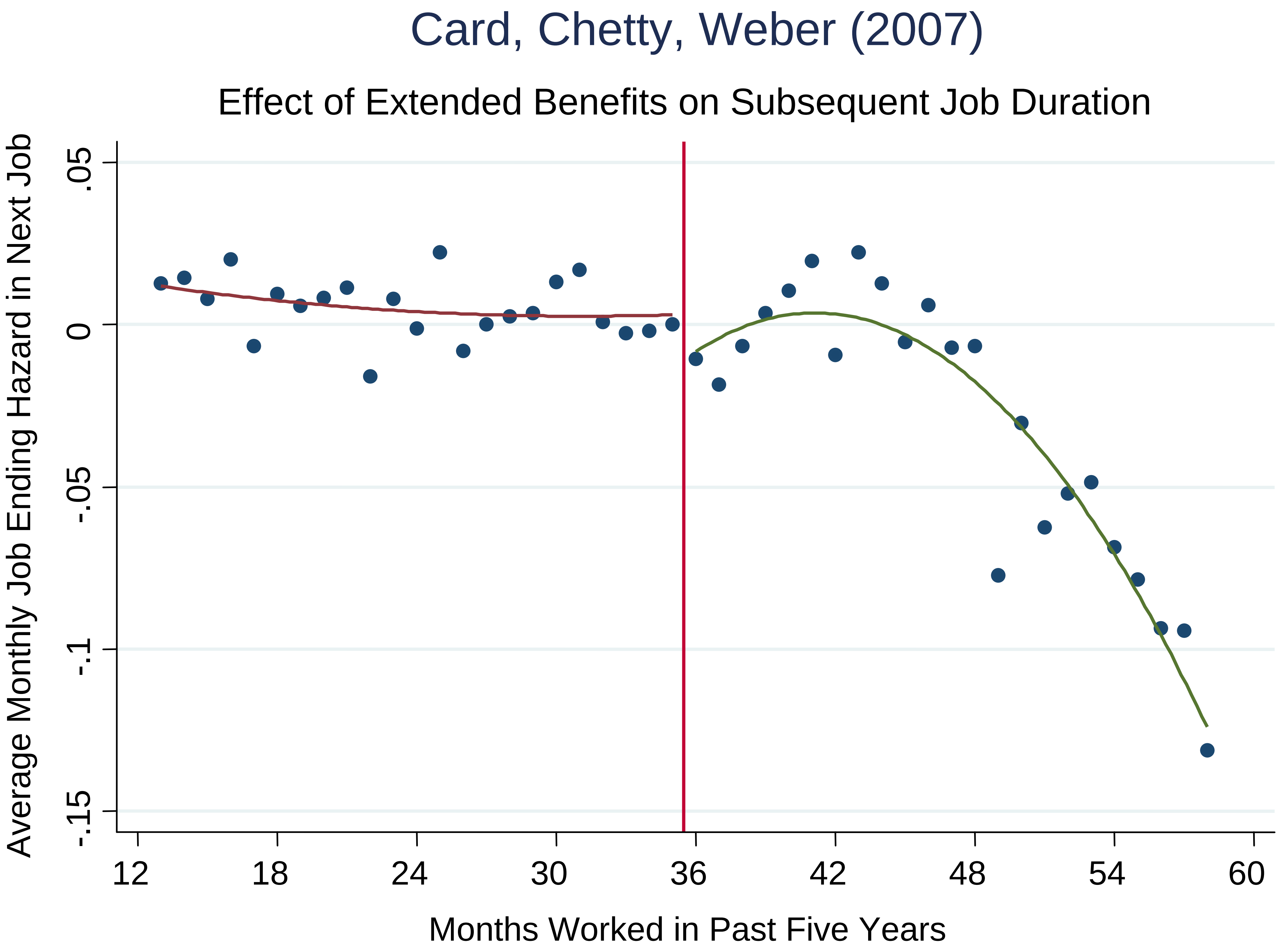
E.g. engineer starts working at McDonalds.

Can examine this using similar data

Look at whether people who got higher benefits and took longer to find a job are better off years later

Card-Chetty-Weber (2007) exploit again the **regression discontinuity** and find no long-term match benefit on subsequent wage or subsequent job duration


Card, Chetty, Weber (2007)
Effect of Extended Benefits on Subsequent Wages
Wage Growth
.1
.05
0
-.05
-.1
12
18
24
30
36
42
48
54
60
Months Worked in Past Five Years


Card, Chetty, Weber (2007)
Effect of Extended Benefits on Subsequent Job Duration
Average Monthly Job Ending Hazard in Next Job
.05
0
-.05
-.1
-.15
12
18
24
30
36
42
48
54
60
Months Worked in Past Five Years

Summary of Empirical Findings on UI

1. Higher benefit level $\Rightarrow$ longer unemployment durations (moral hazard cost)

2. Higher benefit level $\Rightarrow$ more consumption while unemployed (consumption smoothing benefit)

3. UI benefits have no beneficial effects on long-term job outcomes

$\Rightarrow$ Model implies that providing some UI is desirable but UI replacement rate should be only around 50% based on those empirical findings

Moral hazard cost during deep recessions (such as COVID) seems smaller $\Rightarrow$ it makes sense to make UI more generous in recessions

Should UI Benefits be Extended during Recessions?

US extends UI benefits during recessions. Extensions ended in 2014 (controversial policy debate)

1) Social Justice: Harder to find jobs in recessions $\Rightarrow$ being unemployed is less of a choice

$\Rightarrow$ Extending benefits is desirable for fairness

2) Efficiency: In recessions, the job market is too slack [harder to find jobs, easier for firms to find workers] $\Rightarrow$ discouraging search effort in recessions is not as problematic.

Furthermore, UI benefits support spending and hence the economy (through short-term macro effects)

$\Rightarrow$ Extending benefits is desirable for efficiency

DISABILITY INSURANCE

Disability is conceptually close to retirement: some people become unable to work before old age (due to accidents, medical conditions, etc.)

All advanced countries offer public disability insurance almost always linked to the public retirement system

Disability insurance allows people to get Social Security retirement benefits before the "Early Retirement Age" if they are unable to work due to disability

US DISABILITY INSURANCE

1) Federal program funded by OASDI payroll tax, pays SS benefits to disabled workers under retirement age (similar computation of benefits based on past earnings)

2) Program started in 1956 and became more generous overtime (age 50+ condition removed, definition of disability liberalized, replacement rate has grown)

3) Eligibility: Medical proof of being unable to work for at least a year, Need some prior work experience, 5 months waiting period with no earnings required (screening device)

4) Social security examiners rule on applications. Appeal possible for rejected applicants. Imperfect process with big type I and II errors (Parsons AER'91) $\Rightarrow$ Scope for Moral Hazard

5) DI tends to be an absorbing state (most beneficiaries never leave DI program). Can earn up of \$1200/month while on DI.

US DISABILITY INSURANCE

1) In 2024: 8m DI beneficiaries (not counting widows+children), about 4% of working age (20-64) population

2) Very rapid growth: In 1960, less than 1% of working age population was on DI.

3) Growth particularly strong during recessions: early 1990s, late 00s. Some decline from 10m in 2013 to 8m in 2024

Key empirical question: Are DI beneficiaries unable to work? or are DI beneficiaries not working because of DI.

Chart 2.
All Social Security disabled beneficiaries in current-payment status, December 1970–2017

The number of disabled beneficiaries has risen from 1,812,786 in 1970 to 10,059,166 in 2017, driven predominately by an increase in the number of disabled workers. The number of disabled adult children has grown slightly, and the number of disabled widow(er)s has remained fairly level. In December 2017, there were 8,695,475 disabled workers; 1,105,405 disabled adult children; and 258,286 disabled widow(er)s receiving disability benefits.

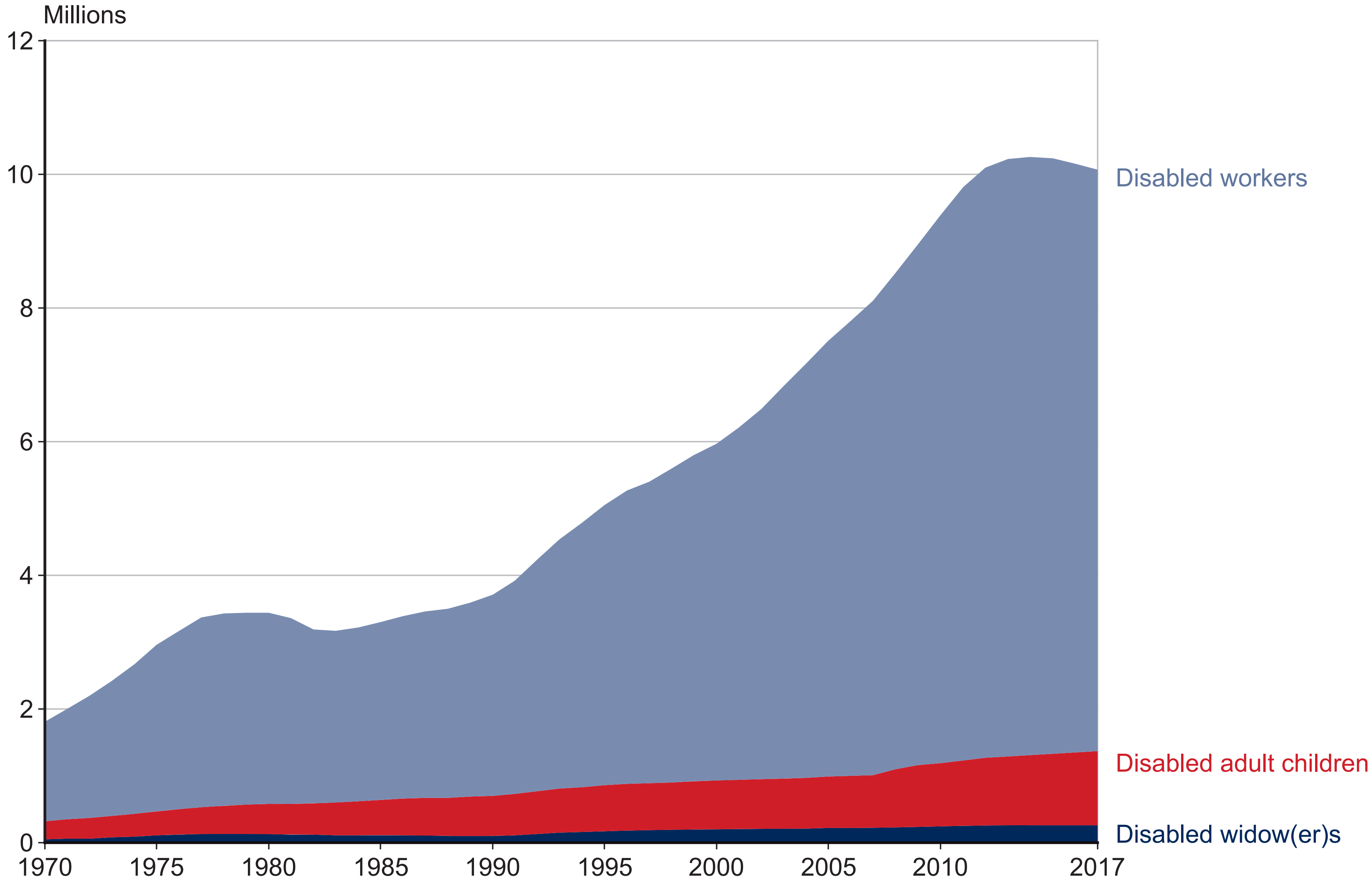
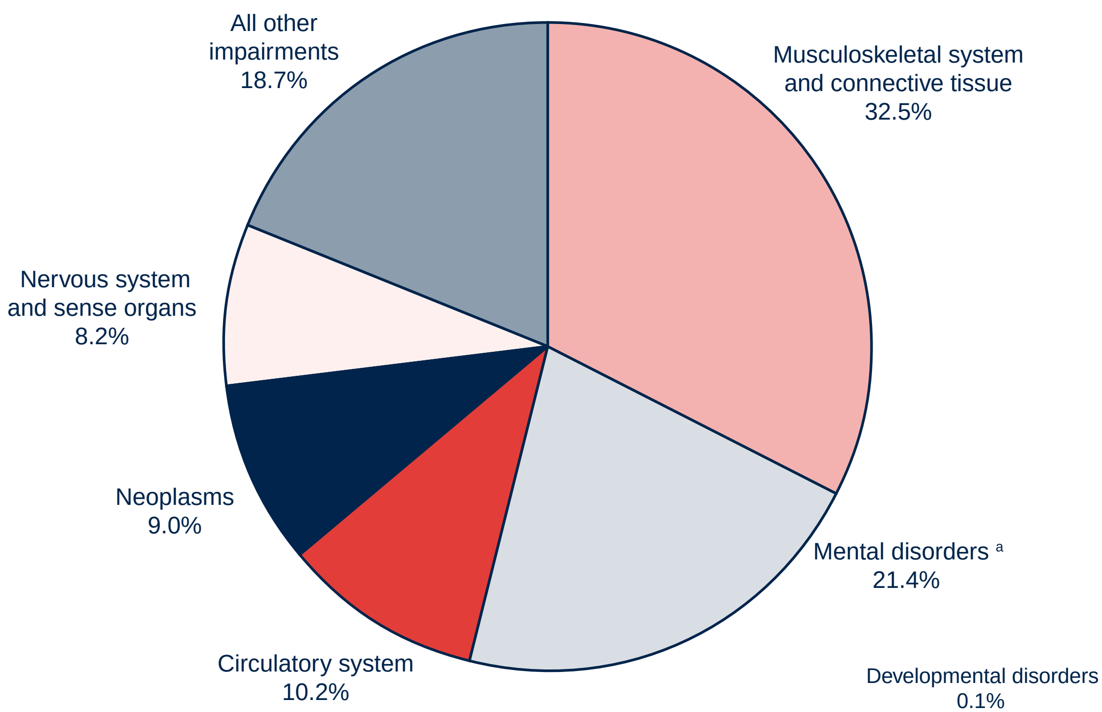


Chart 10.
Disabled-worker awards, by selected diagnostic group, 2010

Source: SSA DI annual report

In 2010, 1,026,988 disabled workers were awarded benefits. Among those awardees, the most common impairment was diseases of the musculoskeletal system and connective tissue (32.5 percent), followed by mental disorders (21.4 percent), circulatory problems (10.2 percent), neoplasms (9.0 percent), and diseases of the nervous system and sense organs (8.2 percent). The remaining 18.7 percent of awardees had other impairments.



US DISABILITY INSURANCE

Detecting disability is challenging, particularly for back injuries and mental health conditions

One way to quantify difficulty in assessment: audit study

Take a set of disability claims that was initially reviewed by a state panel

One year later, resubmit them to the panel as anonymous new claims.

Compare decisions on the **same** cases

$\Rightarrow$ Substantial evidence of Type I errors (incorrect rejection of a disabled person) and Type II errors (letting a non-disabled person on the program)

TABLE 1—REASSESSMENTS OF INITIAL SOCIAL SECURITY DETERMINATIONS

A. *Bureau of Disability Insurance Review One Year After Initial Determination (Percentages):*

	Initial determination	
BDI assessment	Allowance	Denial
Allowance	78.8	21.1
Denial	22.5	77.5

Note: The sample sizes are 250 initial allowances and 248 initial denials.

Source: Smith and Lilienfeld (1971 p. 195).

DI WORK EFFECTS: REJECTED APPLICANTS

Bound AER'89 uses data on work behavior of rejected DI applicants as a counterfactual

Idea: If rejected applicants do not work, then surely DI recipients would not have worked $\Rightarrow$ Rejected applicants' work behavior is an upper bound for LFP rate of DI recipients absent DI

Results: Only 30% of rejected applicants return to work and they earn less than half of the mean non-DI wage

$\Rightarrow$ at most 1/3 of the trend in male work decline can be explained by shift to DI

Von Waechter-Manchester-Song AER'11 replicate Bound using full pop SSA admin data and confirm his results

TABLE 2—EMPLOYMENT, EARNINGS, AND OTHER CHARACTERISTICS OF REJECTED DISABILITY INSURANCE APPLICANTS

	1972			1978		
	Population	Rejected Applicants	Beneficiaries	Population	Rejected Applicants	Beneficiaries
Labor Supply						
Percent Employed	77.7	32.6	3.2	69.3	28.7	2.3
Percent Worked 71/77	91.9	45.0	7.5	86.7	40.4	5.5
Percent Full Year ($\geq$ 50 Weeks)[a]	76.8	47.4	31.4	83.5	41.2	22.2
Percent Full Time ($\geq$ 35 Hours)[a]	95.4	75.9	25.0	92.4	79.6	38.3
Earnings Among Positive Earners						
Median Annual Earnings, 71/77[b]	$9000	$4000	$700	$14000	$5300	$1000

Source: Bound 1991

DI WORK EFFECTS: EXAMINERS' STRINGENCY

Maestas-Mullen-Strand AER'13 obtain causal effect of DI on work using natural variation in DI examiners' stringency and large SSA admin data linking DI applicants and examiners

Idea: (a) Random assignment of DI appplicants to examiners and (b) examiners vary in the fraction of cases they reject $\Rightarrow$ Valid instrument of DI receipt

Result: DI benefits reduce work of applicants by 28 points $\Rightarrow$ DI has an impact but fairly small (consistent with Bound AER'89)

Note: This estimates the causal effects of DI on working behavior for marginal cases: applicants who are admitted with lenient judge but rejected with tough judge [Average effect on all DI recipients likely smaller]

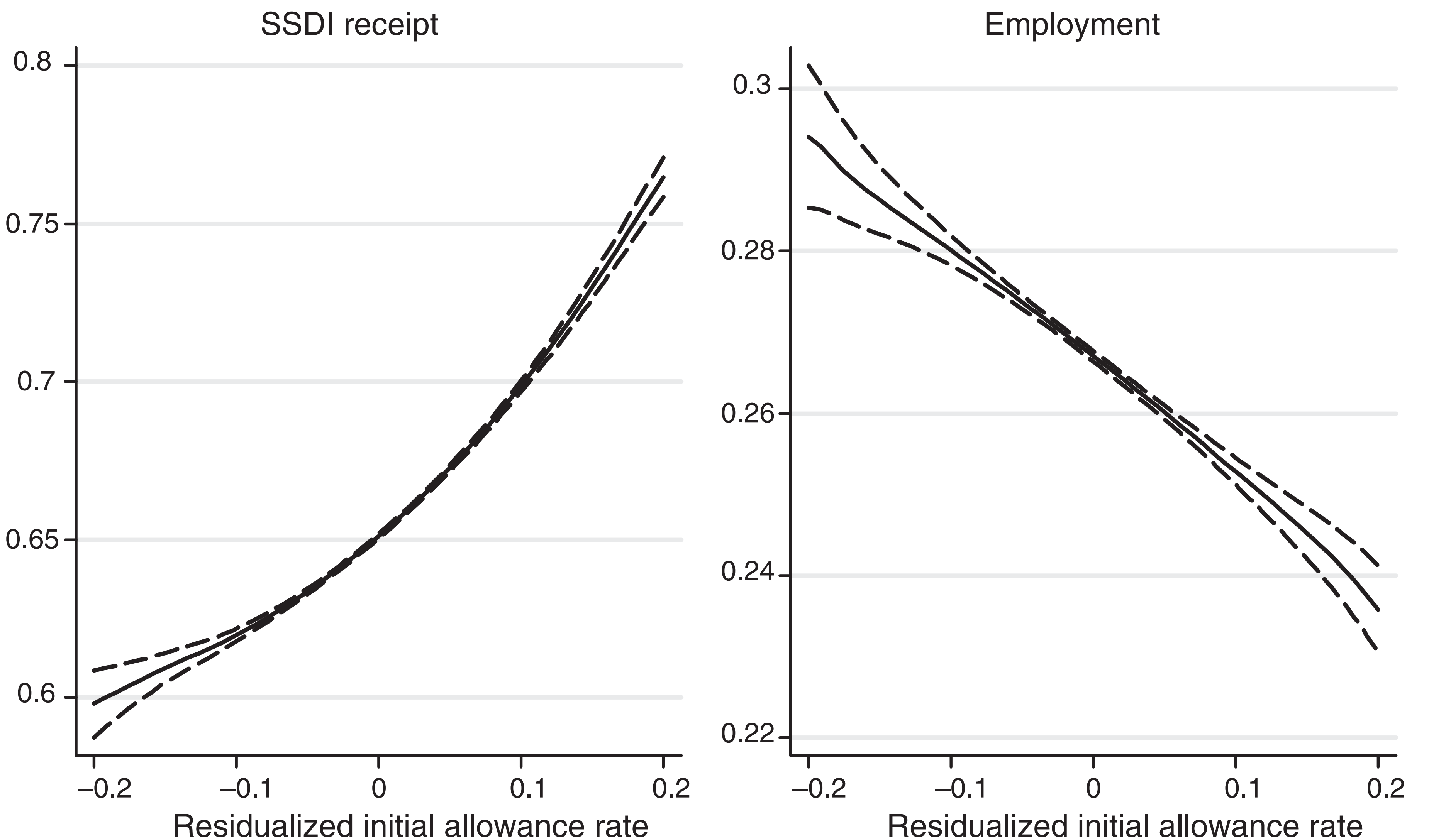


Figure 4. SSDI Receipt and Labor Supply by Initial Allowance Rate

Notes: Ninety-five percent confidence intervals shown with dashed lines. Employment measured in the second year after the initial decision. Bandwidth is 0.116 for DI and 0.130 for labor force participation.

Source: DIODS data for 2005 and 2006.

DI Generosity Effects: Regression Kink Design (RKD)

DI benefits calculated like SS benefits: AIME formula based on average life-time earnings creates a "kinked" relationship

Ideal setting for an RKD (Card et al. 2015): test whether outcome such as earnings or mortality is also "kinky"

1) Test first for no sorting of DI recipients around kink to validate RKD design [similar to RDD validation]

2) RKD estimate: Change in slope of outcome at kink / Change in slope of benefits at kink

a) Gelber et al. '17 analyze effects on earnings of DI generosity and find an income effect of -$0.2 per dollar of benefits

b) Gelber et al. 18 analyze effects on mortality: at lower bend point, $1K extra DI/year reduces annual mortality by .25 points (1 out of 400 lives saved)

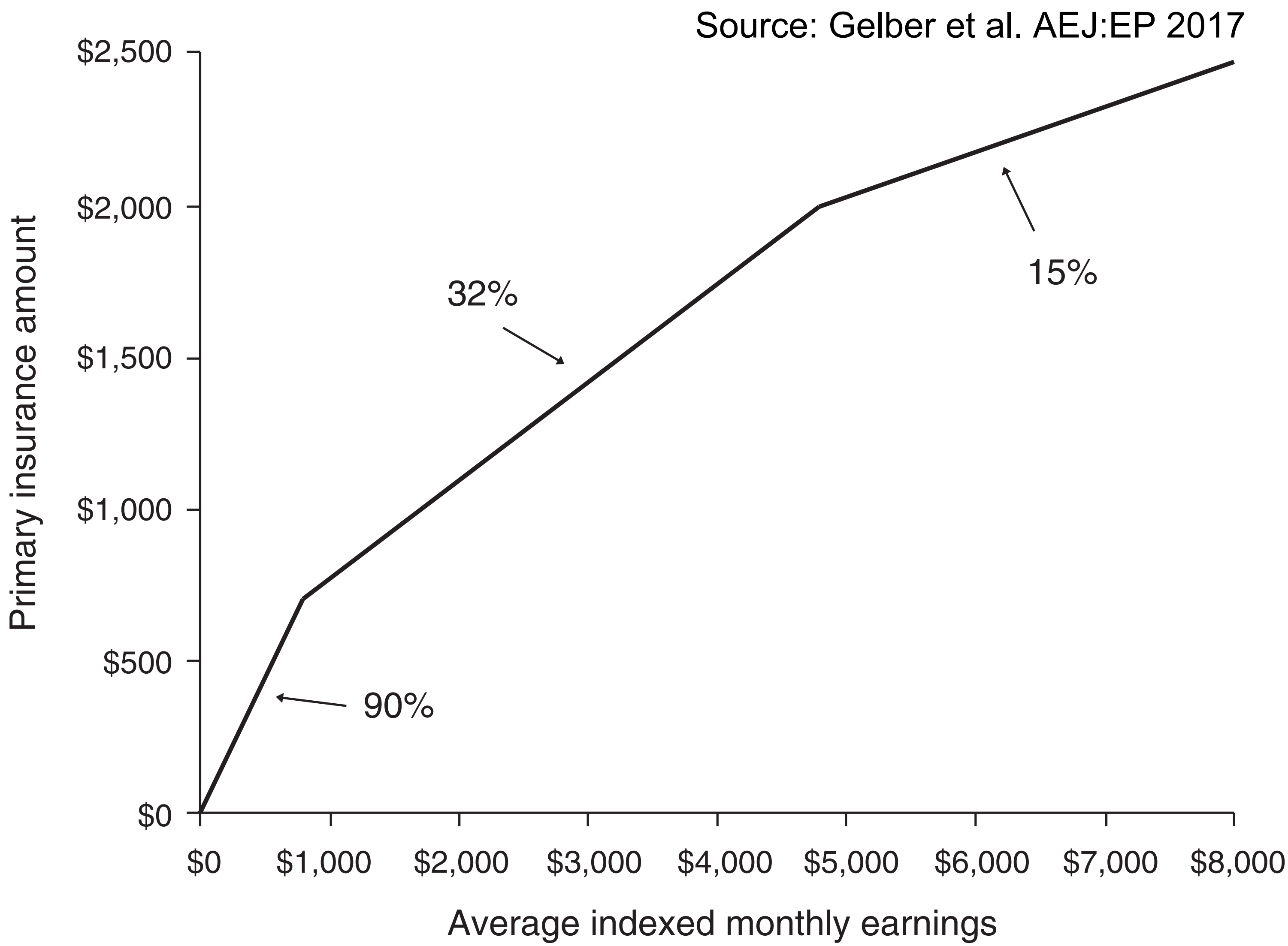


Figure 1. Primary Insurance Amount as a Function of Average Indexed Monthly Earnings

Notes: The figure shows the primary insurance amount (PIA) as a function of average indexed monthly earnings (AIME) in 2013. The percentages are marginal replacement rates.

Source: SSA (2013)

I. Initial density of AIME

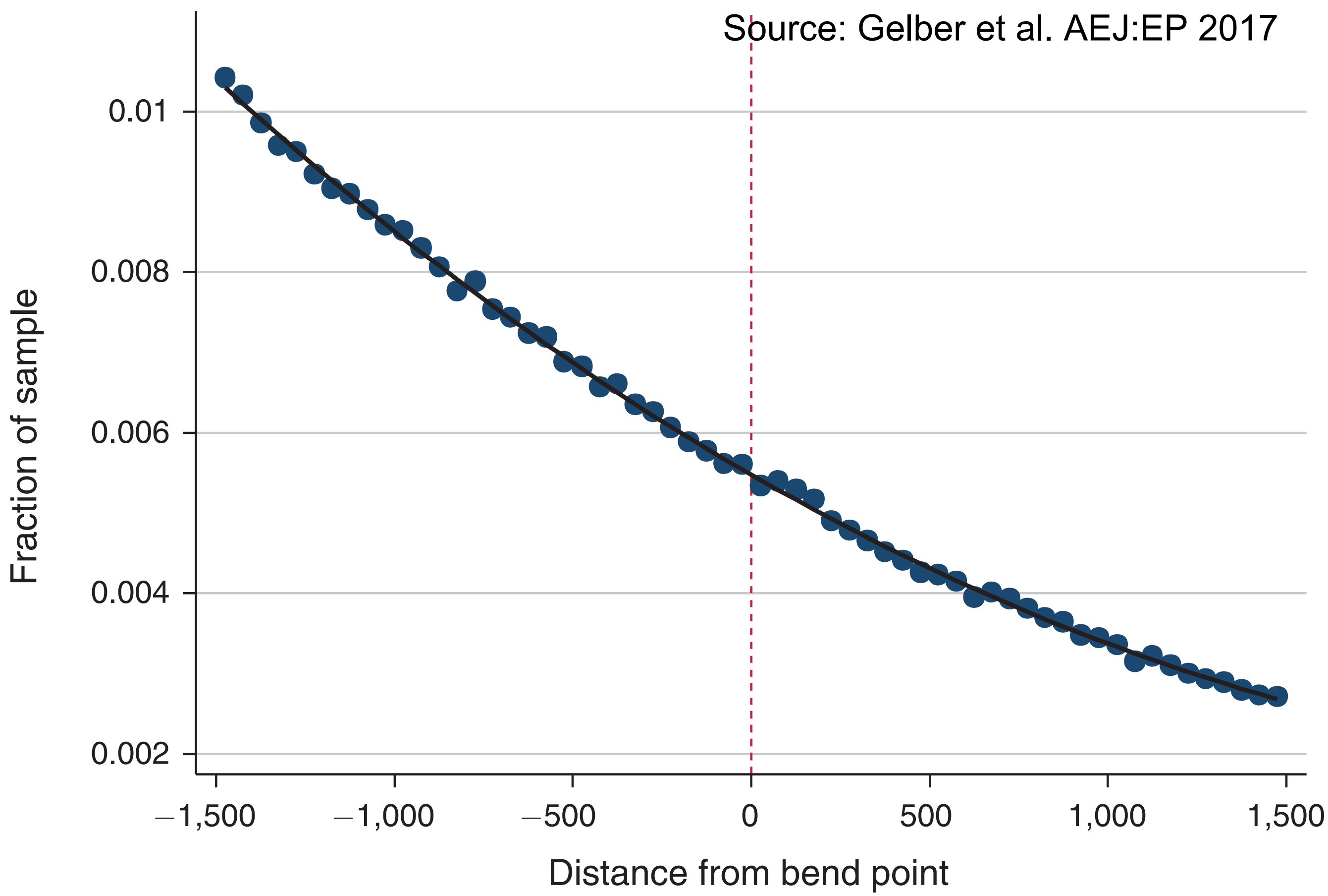


Figure 3. Smoothness of Density and Predetermined Covariates around the Upper Bend Point (*continued*)

Notes: The figure shows the density of initial AIME in $50 bins as a function of distance of initial AIME to the upper bend point. The number of observations appears smooth through this bend point, with no sharp change in slope or level. The upper bend point is where the marginal replacement rate in converting AIME to PIA changes from 32 percent to 15 percent. The sample includes DI beneficiaries within $1,500 of the upper bend point (see the text for other sample restrictions). The fraction of the sample in each bin is calculated by dividing the number of beneficiaries in each bin by the total number of beneficiaries in the sample. The best-fit line is a ninth-order polynomial that parallels the regression presented in Table 2 that minimizes the corrected Akaike Information Criterion (AICc).

Source: The data are from SSA administrative records.

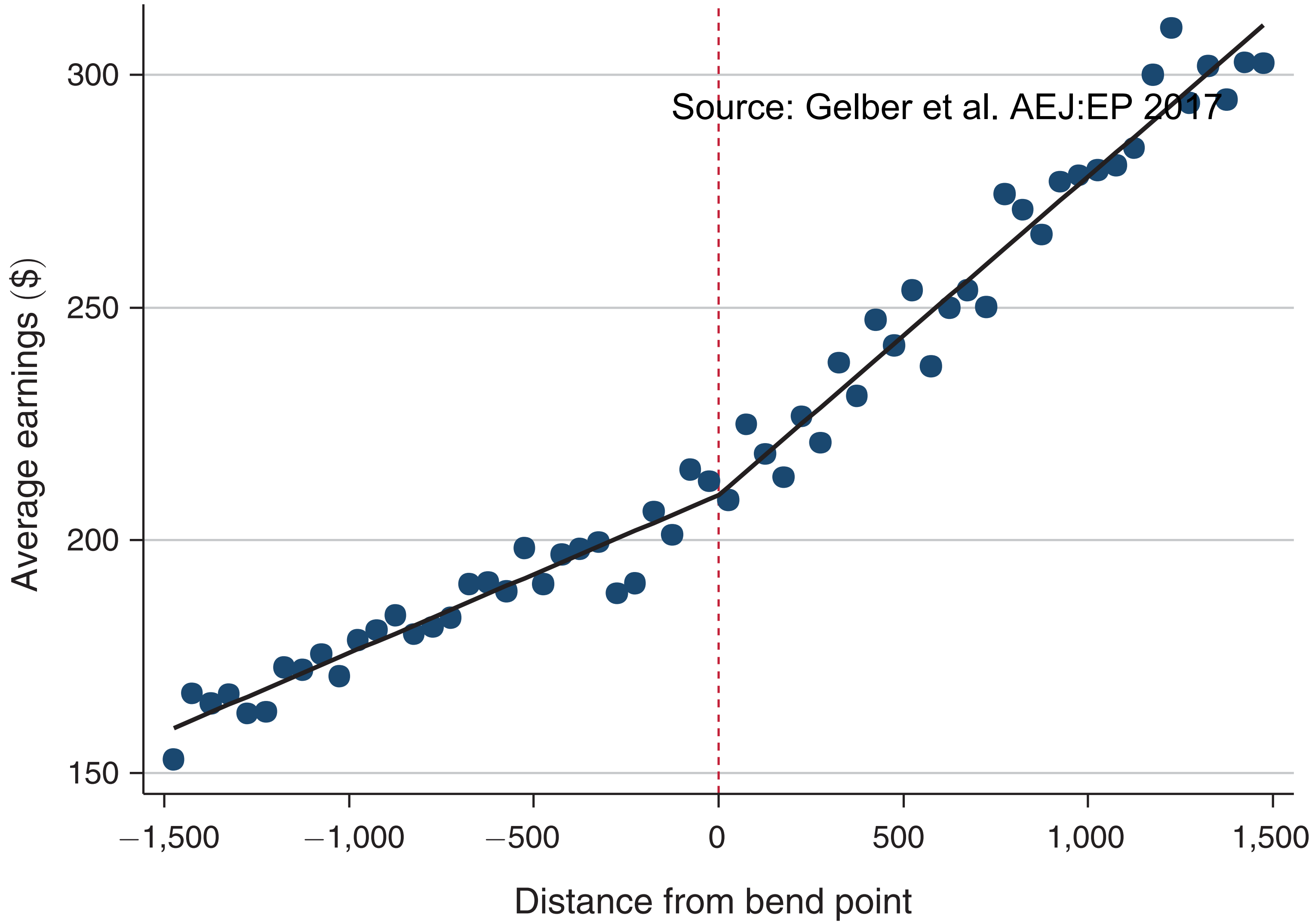
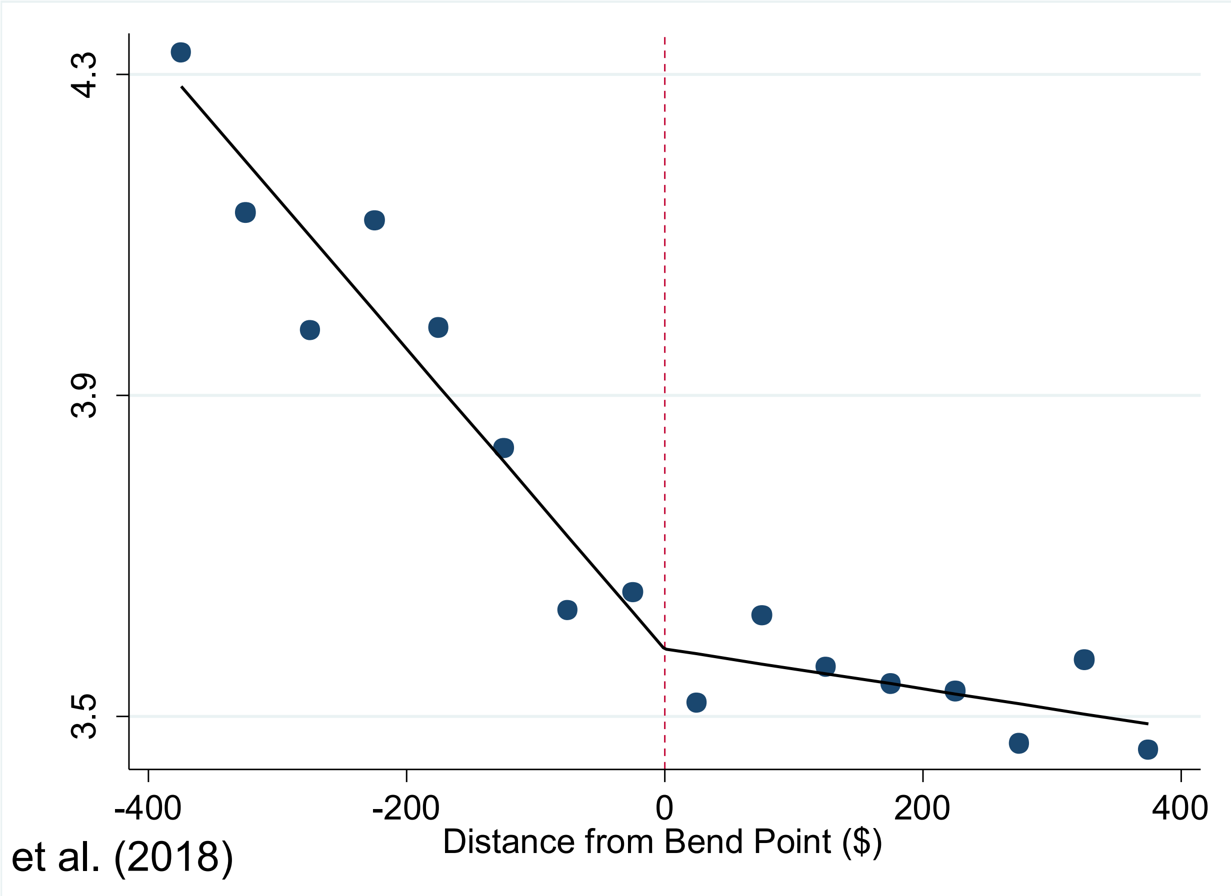


Figure 4. Average Monthly Earnings after DI Allowance

Notes: The figure shows mean monthly earnings in the first four years after going on DI, in $50 bins, as a function of distance of AIME from the bend point, where AIME is measured when applying for DI. The figure shows that mean earnings slope upward more steeply above the upper bend point than below it, with fitted lines that lie close to the data.

Figure 3. Annual Percent Mortality Rates around the Bend Points

A: Lower bend point



Source: Gelber et al. (2018)

Workers Compensation: Institutional Features

Workers compensation is insurance for injuries on the job, mainly temporary injuries that prevent work (short-term)

Workers Compensation is a state-level program

Two components: medical and indemnity

Indemnity payment replaces roughly two-thirds of lost wages.

Unlike UI, WC payments are untaxed, leading to a higher replacement that is near 90% on average.

Substantial variation across states in benefit levels

Workers Compensation (WC): Institutional Features

1) Workers comp is a mandated benefit; no explicit tax but firms required by law to provide this benefit to workers

Most firms choose to buy coverage from private insurers

Premiums are more tightly experience rated than UI because they are determined by private sector

Insurance companies charge high-risk firms more.

2) Important feature of WC: no-fault insurance.

When there is a qualifying injury, WC benefits paid regardless of whether the injury was the worker's or the firm's fault.

Idea: reduce inefficiency of tort system (legal costs) by having fixed rules and not worrying about liability

Moral Hazard in Workers? Compensation

Moral hazard in WC can manifest itself in reported injuries, injury durations, and types of injuries reported.

E.g. easier to report back pain–very hard to verify

Huge issue in CA–companies paid high workers comp rates

Governor Schwarzenegger reform in 2004 cut benefits sharply, claiming to reduce injuries and "open CA for business"

Is it true that there is substantial moral hazard?

Again, consider several pieces of evidence

Strategy 1: Timing of injuries. "Monday effect" (faking weekend injuries into work injuries)

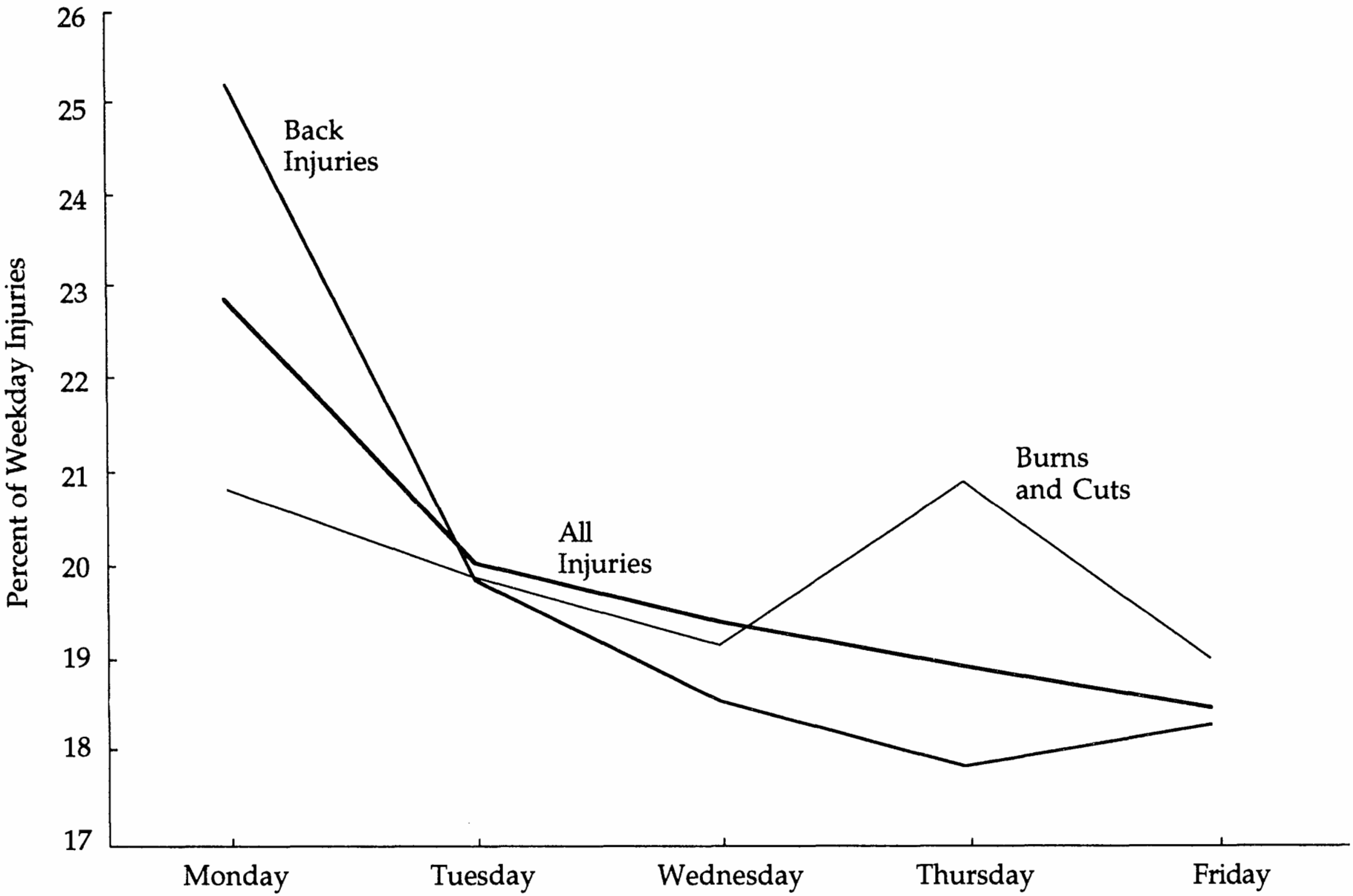


Figure 1. Distribution of Weekday Injuries.

Source: Card and McCall 1996

Moral Hazard in Workers? Compensation

Strategy 2: examine effect of workers comp benefit levels on durations using a diff-in-diff strategy (Meyer, Viscusi, Durbin 1995)

Reforms in Kentucky and Michigan that increased benefits for high-earning workers (but not low-earning workers) in late 1980s

Compare changes in injury durations and medical costs for high-earners vs. low earners in those states before and after reform

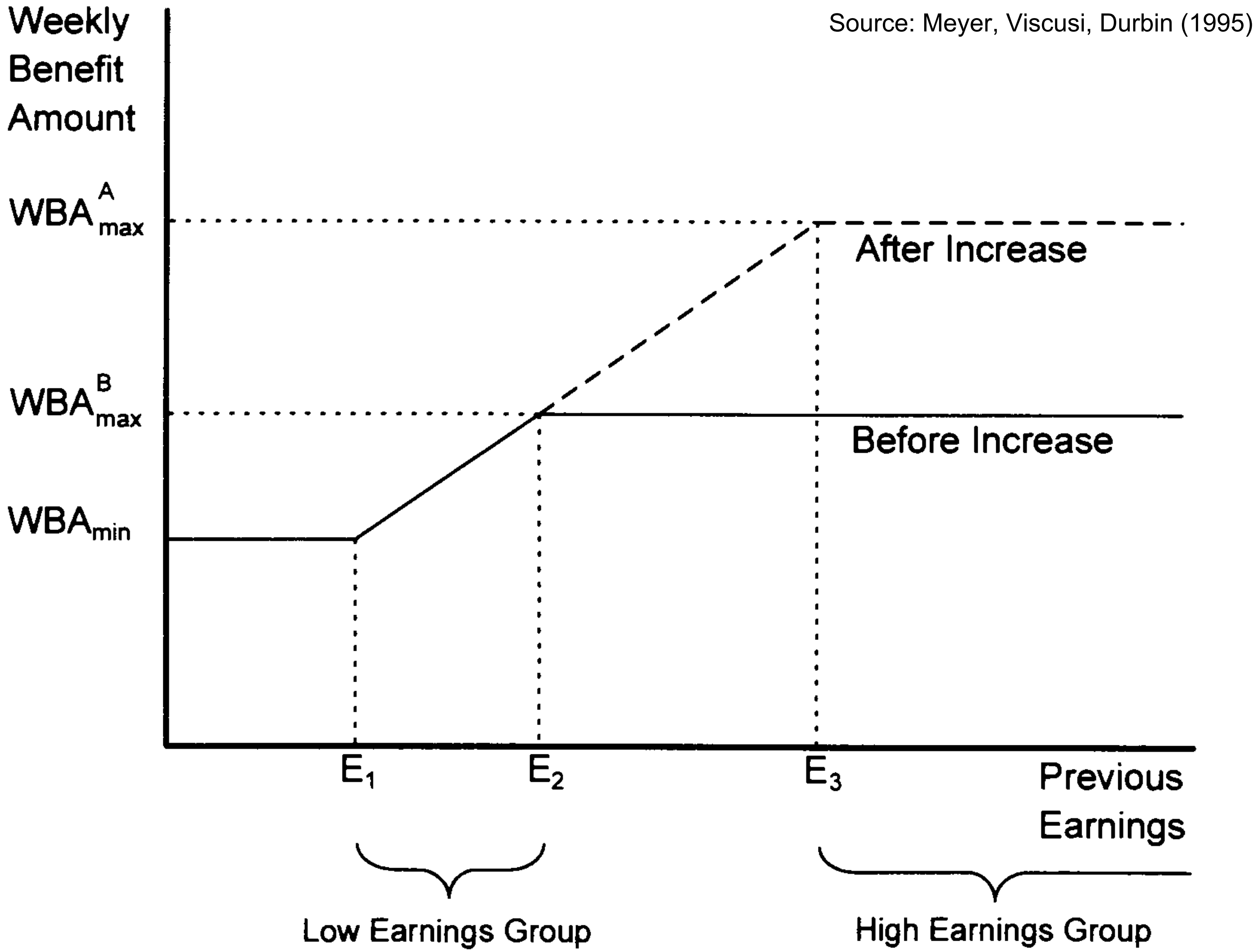


FIGURE 1. TEMPORARY TOTAL BENEFIT SCHEDULE BEFORE AND AFTER AN INCREASE IN THE MAXIMUM WEEKLY BENEFIT

Variable	Kentucky Before increase (1)	Kentucky After increase (2)	Kentucky Percentage change (3)	Michigan Before increase (4)	Michigan After increase (5)	Michigan Percentage change (6)
Maximum benefit ($)	131.00	217.00	65.65	181.00	307.00	69.61
Replacement rate, high earnings (percent)	32.70 (0.25)	51.02 (0.37)	56.02 (1.65)	30.01 (0.35)	44.15 (0.48)	47.14 (2.33)
Replacement rate, low earnings (percent)	66.42 (0.20)	66.66 (0.22)	0.36 (0.44)	66.64 (0.24)	66.35 (0.30)	−0.45 (0.58)

Source: Meyer, Viscusi, Durbin 1995

TABLE 4—KENTUCKY AND MICHIGAN: DURATION AND MEDICAL COSTS OF TEMPORARY TOTAL DISABILITIES DURING THE YEARS BEFORE AND AFTER BENEFIT INCREASES

Variable	High earnings: Before increase (1)	High earnings: After increase (2)	Low earnings: Before increase (3)	Low earnings: After increase (4)	Differences: [(2)−(1)] (5)	Differences: [(4)−(3)] (6)	Difference in differences: [(5)−(6)] (7)
Mean duration (weeks)							
Kentucky	11.16	12.89	6.25	7.01	1.72	0.76	0.96
	(0.83)	(0.83)	(0.30)	(0.41)	(1.17)	(0.51)	(1.28)
Michigan	14.76	19.42	10.94	13.64	4.66	2.70	1.96
	(2.25)	(2.67)	(1.09)	(1.56)	(3.49)	(1.90)	(3.97)
Median duration (weeks)							
Kentucky	4.00	5.00	3.00	3.00	1.00	0.00	1.00
	(0.14)	(0.20)	(0.11)	(0.12)	(0.25)	(0.16)	(0.29)
Michigan	5.00	7.00	4.00	4.00	2.00	0.00	2.00
	(0.45)	(0.67)	(0.22)	(0.28)	(0.81)	(0.35)	(0.89)
Median medical cost (dollars)							
Kentucky	393.51	411.49	238.96	254.40	17.98	15.44	2.55
	(19.29)	(22.72)	(8.48)	(9.11)	(29.80)	(12.44)	(32.30)
Michigan	689.73	765.00	390.63	435.00	75.27	44.38	30.89
	(77.30)	(134.53)	(32.80)	(33.09)	(155.16)	(46.59)	(162.00)

Source: Meyer, Viscusi, Durbin 1995

Moral Hazard in Workers' Compensation

Result: 10% increase in WC benefit raises out-of-work duration due to injury by 4%

Again, need to weigh this against benefits to reach policy conclusions

Give people more time to heal after injury without rushing them back to work

Higher consumption while out of work

No evidence yet on these issues

CONCLUSION

Individuals clearly value the consumption smoothing provided by social insurance programs

In each case there are moral hazard costs associated with the provision of the insurance

Empirical analyses of all three programs can be used to inform policy makers' decisions as program reforms move forward

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