Undergraduate Public Finance: Unemployment Insurance, Disability Insurance, and Workers' Compensation

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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.

14.1

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)

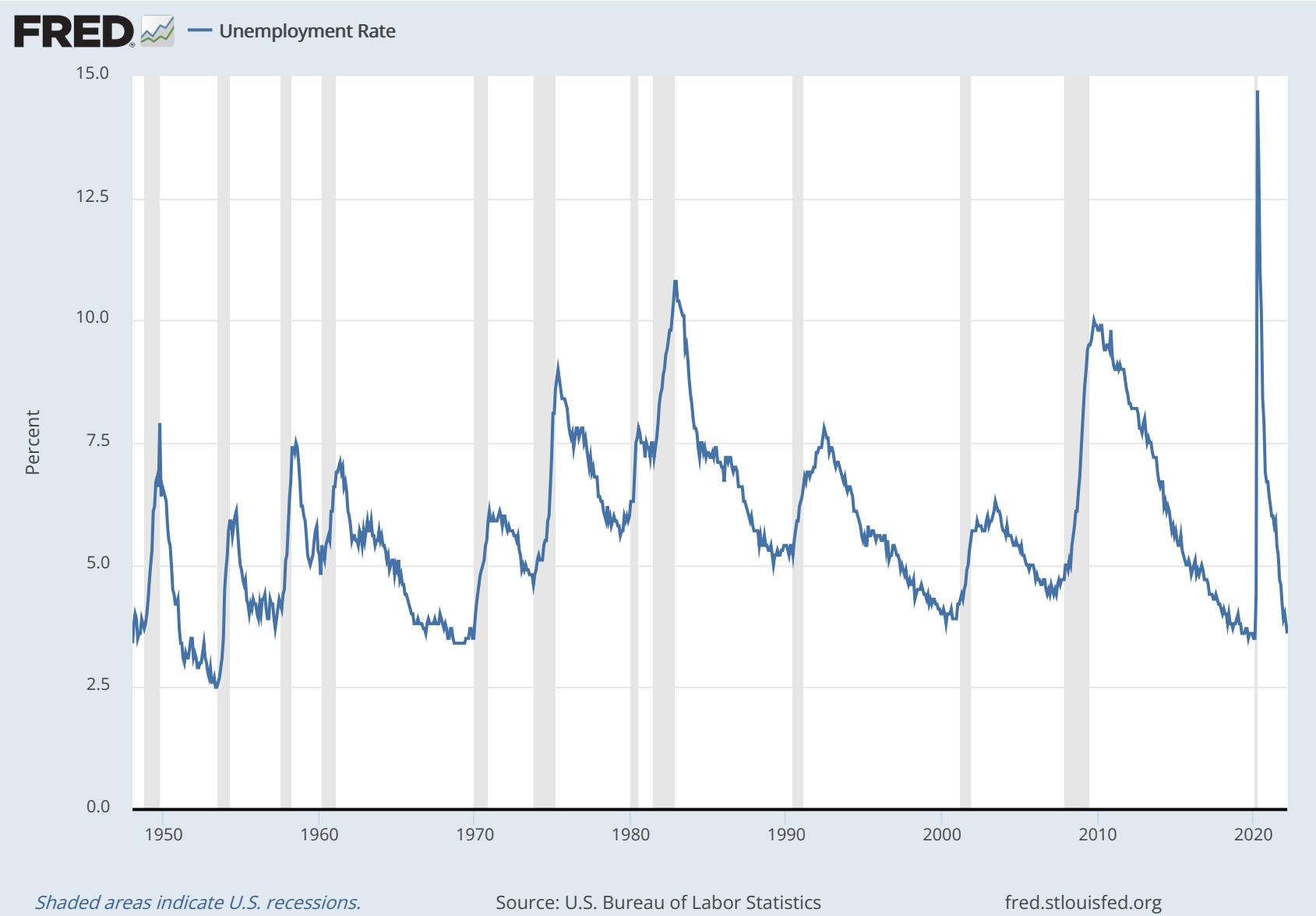
Macroeconomic importance in stabilization/stimulus

Social program triggered by an involuntary job loss

Controversial debate about unemployment benefits

Benefit: helps people in a time of need (consumption smoothing)

Cost: reduces incentive to search for work while unemployed (moral hazard)


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
Shaded areas indicate U.S. recessions.
Source: U.S. Bureau of Labor Statistics
fred.stlouisfed.org

Institutional Features of Unemployment Insurance

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

$\Rightarrow$ Useful as a "laboratory" for empirical work

Financing of UI Benefits

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

⇒ 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

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

⇒ 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)

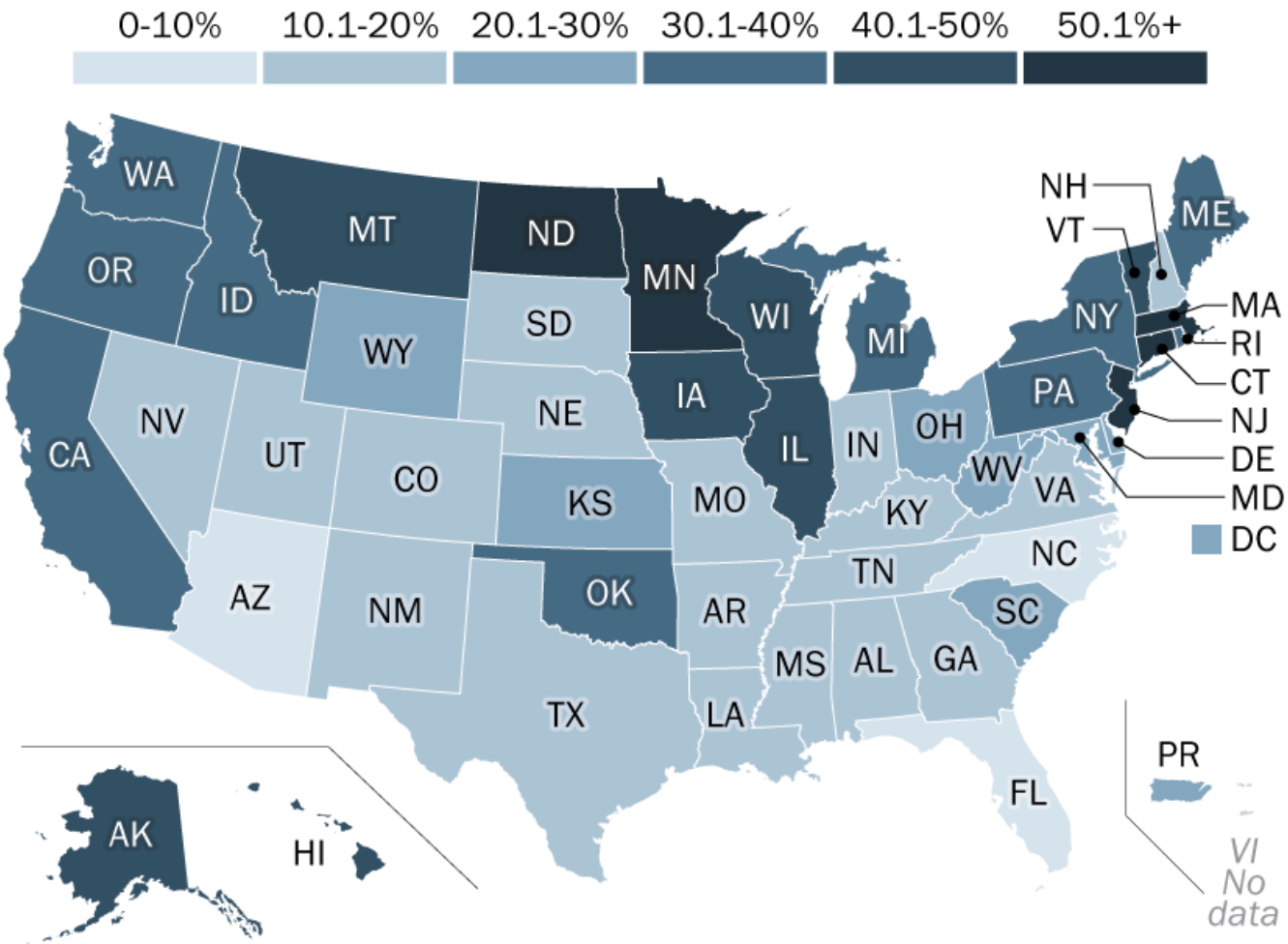
(3) Individuals must be actively seeking work and willing to accept a job comparable to the one lost (hard to check)

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

Even among eligible, 50% do not takeup the UI benefit

$\Rightarrow$ Lack of information about eligibility, stigma from collecting a government handout, or transaction costs

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



UI Benefits

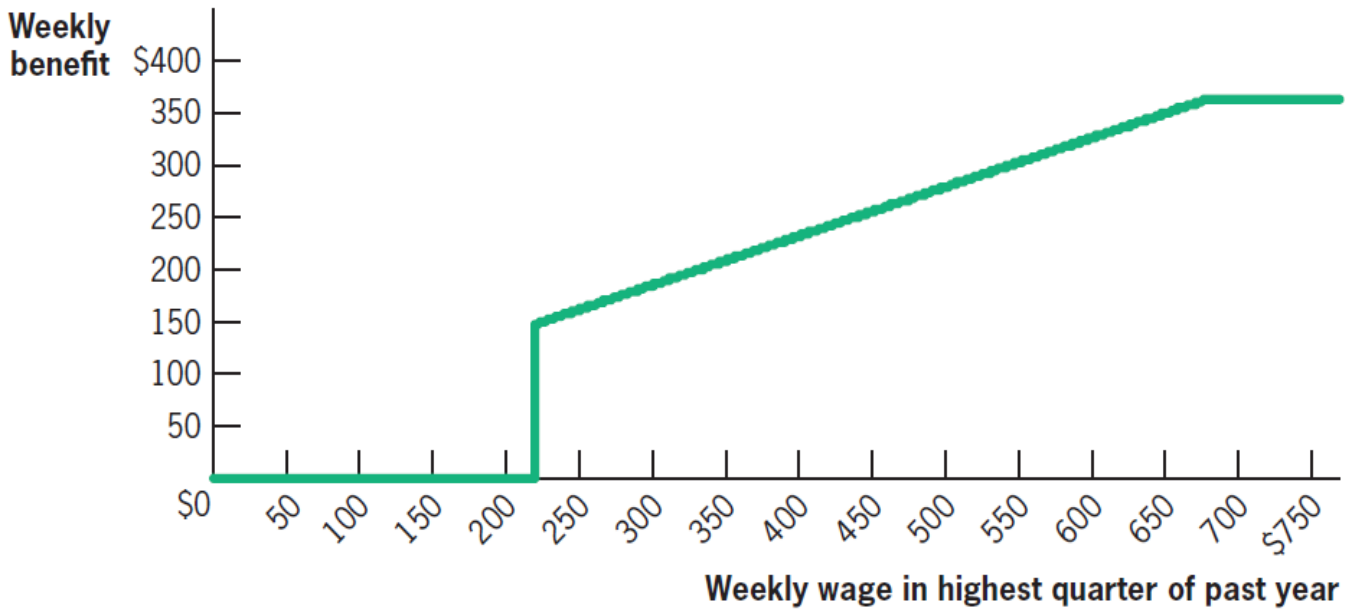
UI benefits are a function of previous earnings and vary by state.

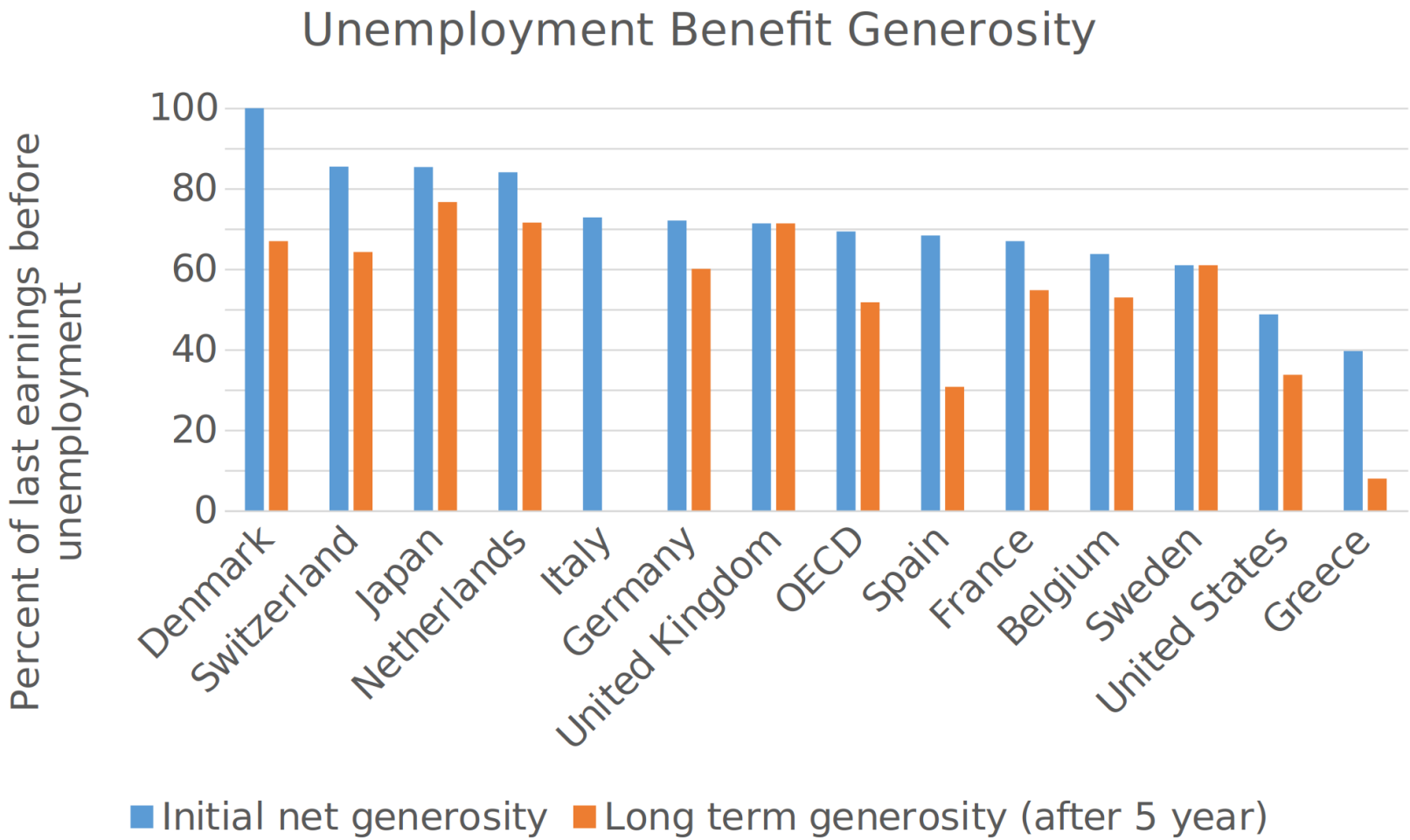
Replacement rate: the amount of previous earnings that is replaced by the UI system

$\Rightarrow$ Replacement rates vary from 35% to 55% of earnings

14.1

Unemployment Benefit Schedule for Michigan




Unemployment Benefit Generosity
Percent of last earnings before unemployment
100
80
60
40
20
0
Denmark
Switzerland
Japan
Netherlands
Italy
Germany
United Kingdom
OECD
Spain
France
Belgium
Sweden
United States
Greece
Initial net generosity
Long term generosity (after 5 year)

UI Benefits Duration

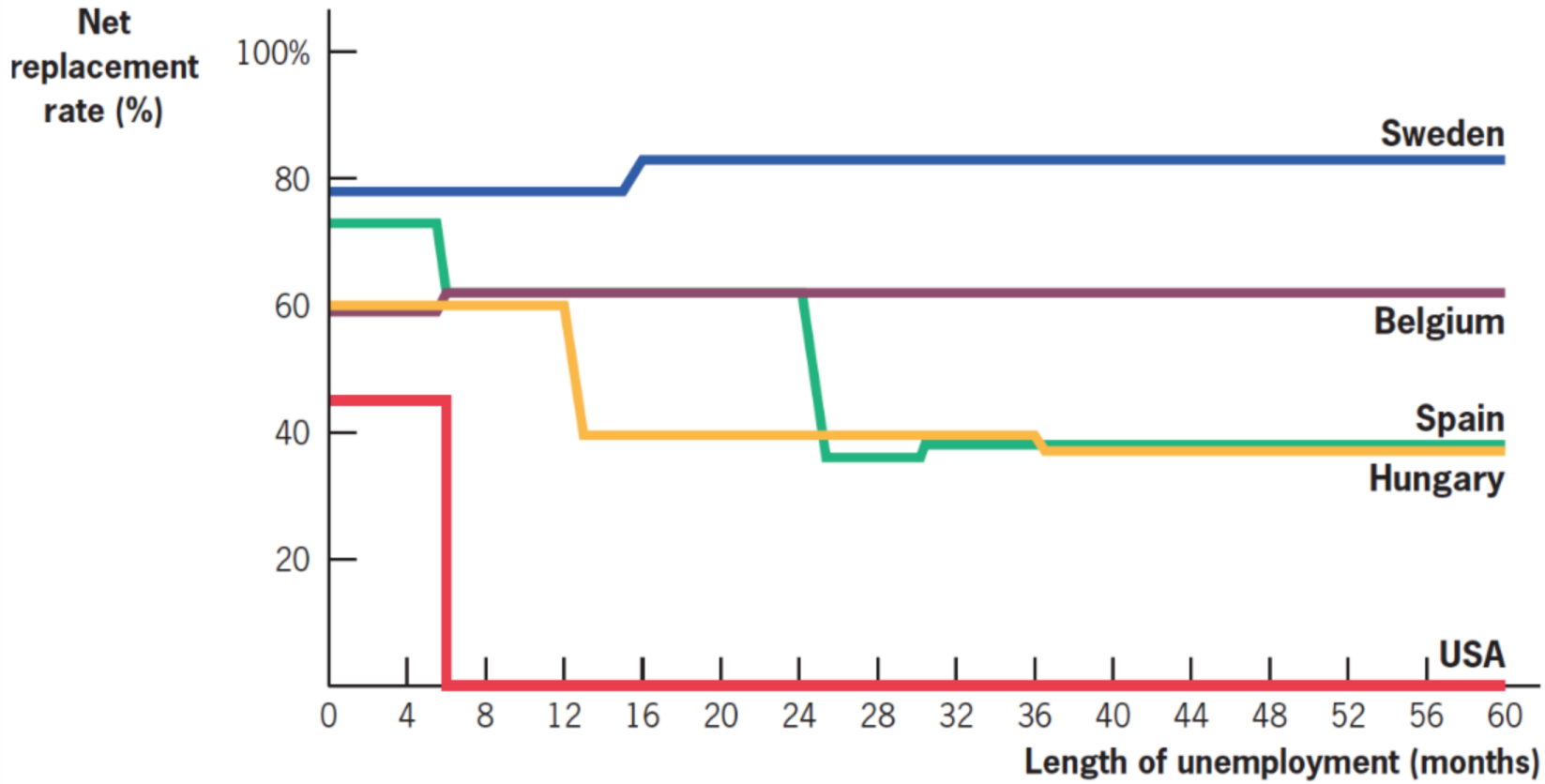
In general, in the US, one can collect UI for 6 months.

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


Net replacement rate (%)
100%
80
60
40
20
Sweden
Belgium
Spain
Hungary
USA
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
Length of unemployment (months)

Analysis of Optimal Unemployment Insurance

The optimal UI trades off insurance value vs. efficiency costs.

In principle, we would like to provide full insurance with 100% replacement rate if there were no moral hazard (i.e., perfect consumption smoothing).

With moral hazard, a full insurance would eliminate incentives to find a job.

$\Rightarrow$ The optimal replacement rate should be less than 100% (i.e., partial insurance).

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

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

Empirical Estimation of Effects of UI

The moral hazard in UI mainly impacts unemployment spells.

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: **difference-in-differences**

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

Empirical Estimation of Effects of UI: Evidence

Meyer (1990) and many others 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

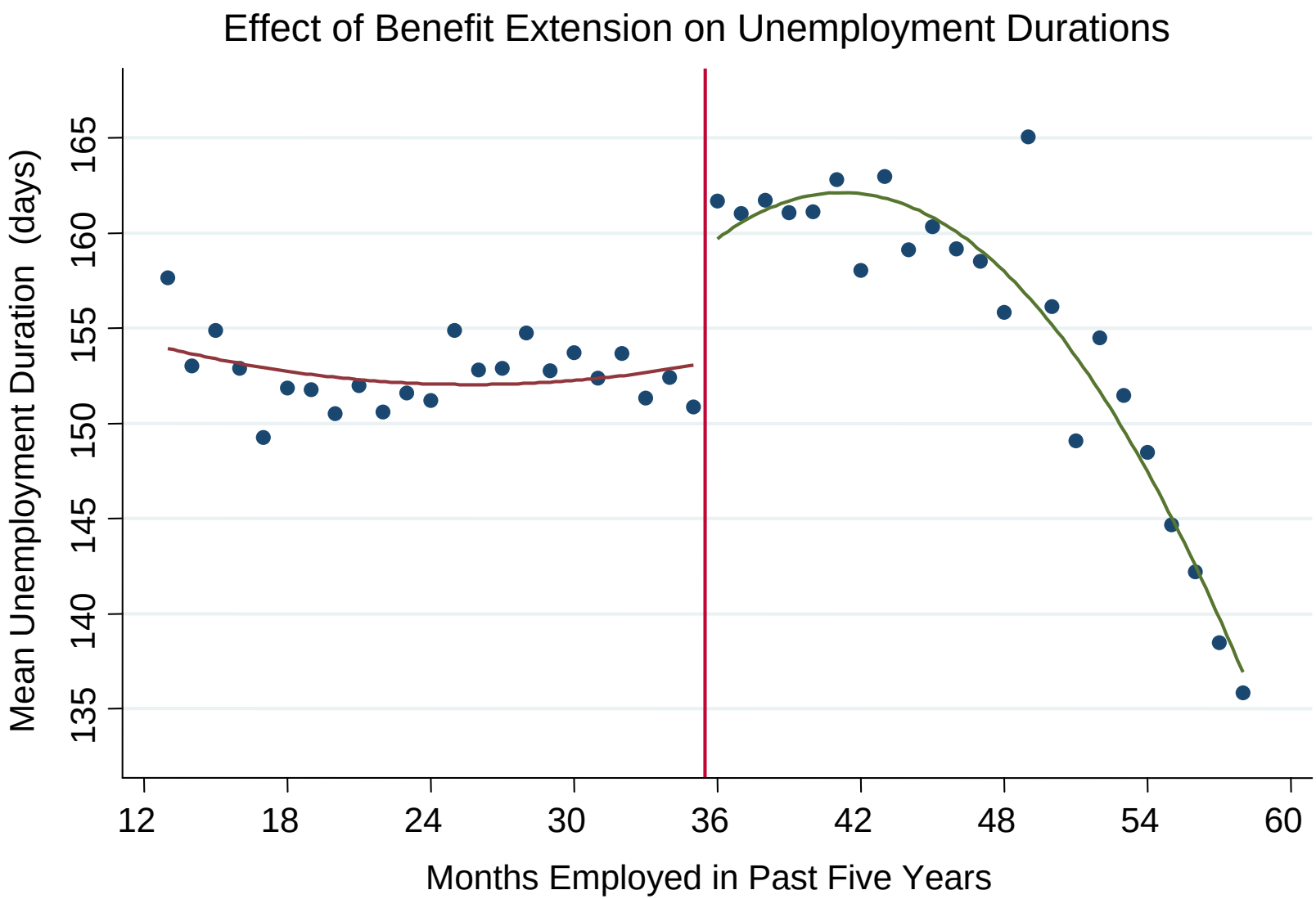
$\Rightarrow$ 10% rise in unemployment benefits leads to about a 4-6% increase in unemployment durations.

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 the COVID-19 pandemic.

They find that the 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

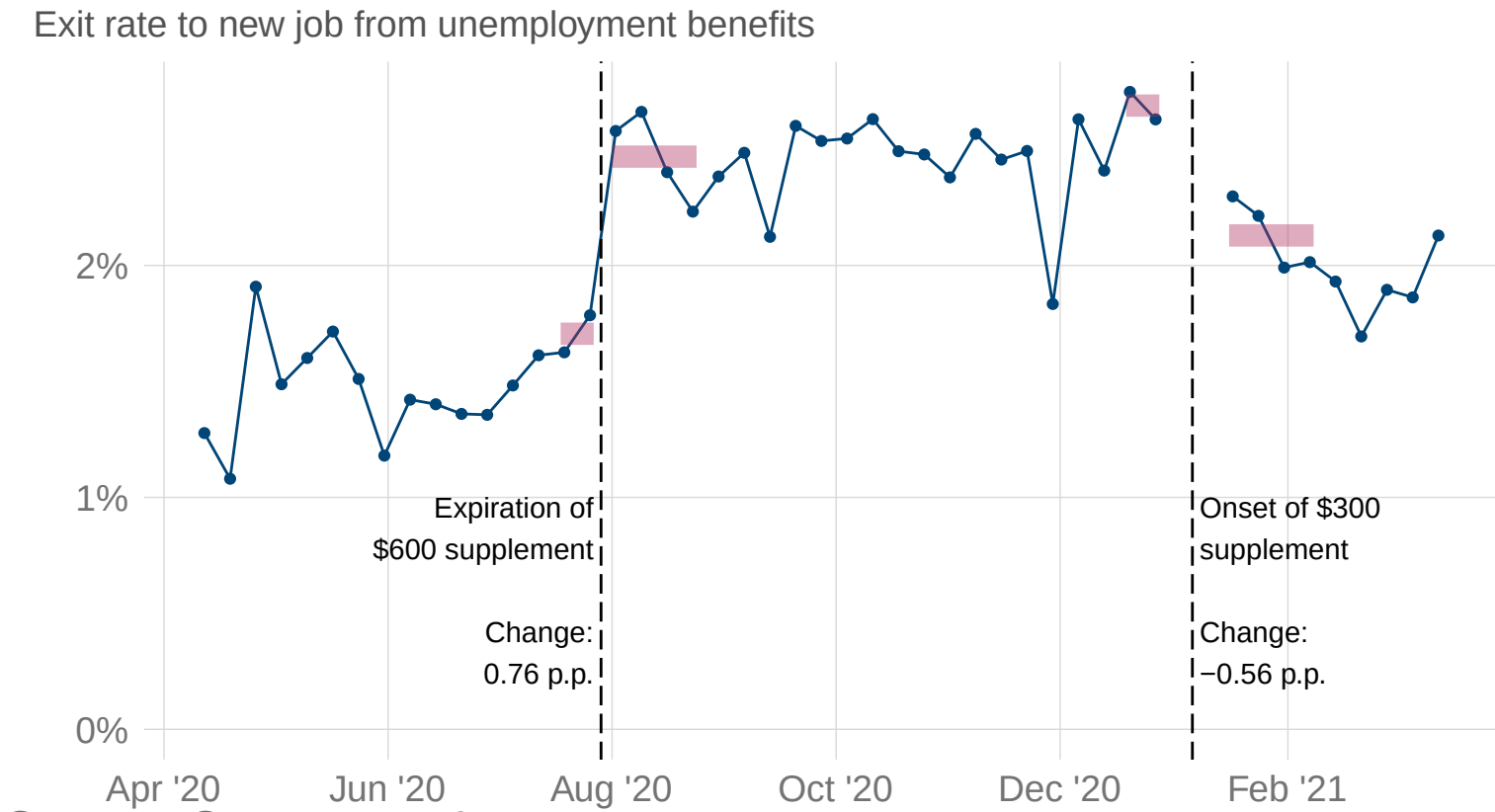
$\Rightarrow$ Negative moral hazard effects of UI

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

$\Rightarrow$ UI was an efficient way to help job losers during the pandemic.

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

A difference-in-differences strategy has been used to examine how UI benefits affect consumption.

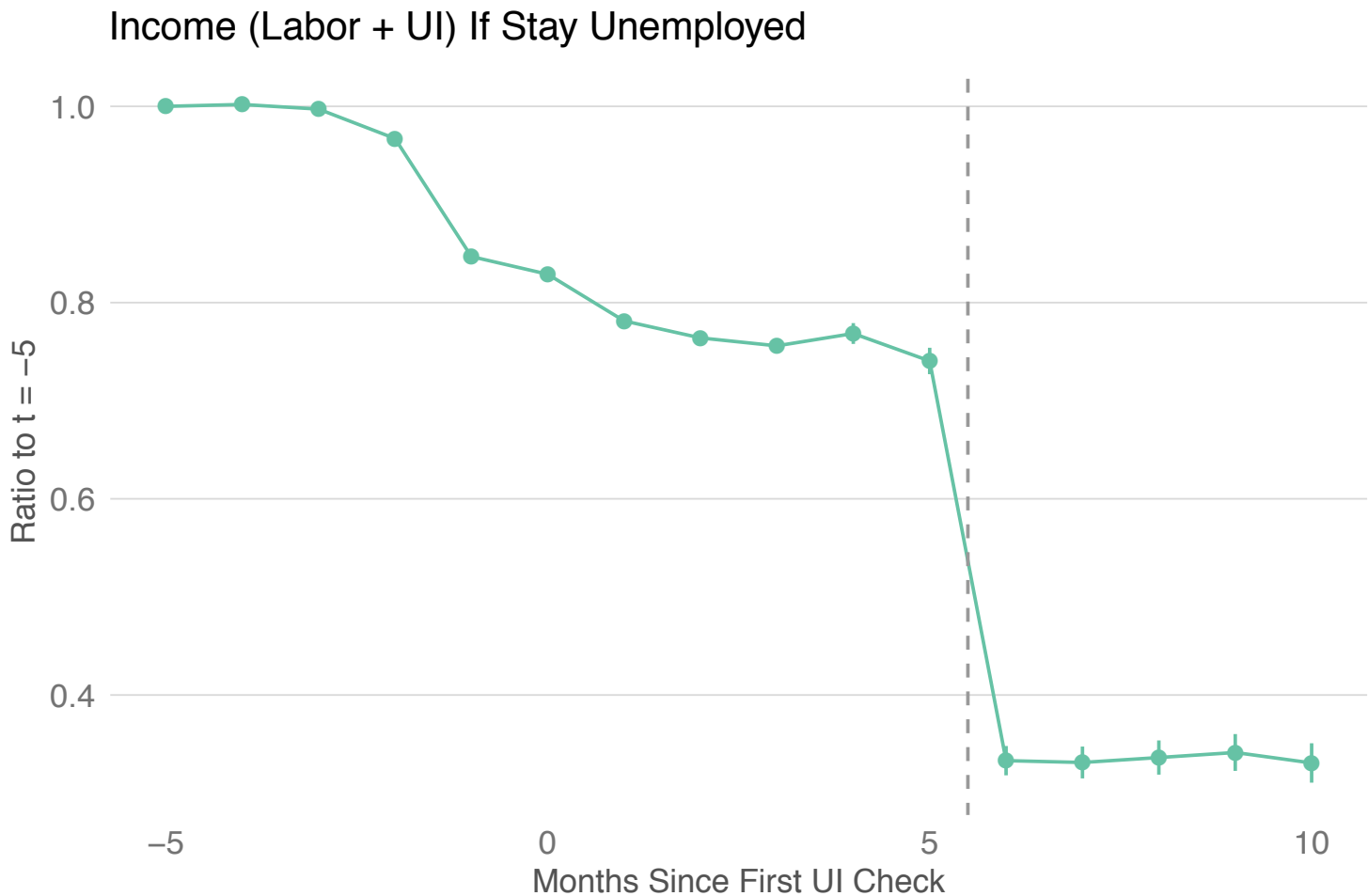
Gruber (1997) finds that, in the absence of UI, the consumption of the unemployed would fall by 22% – over three times the average fall in the presence of UI.

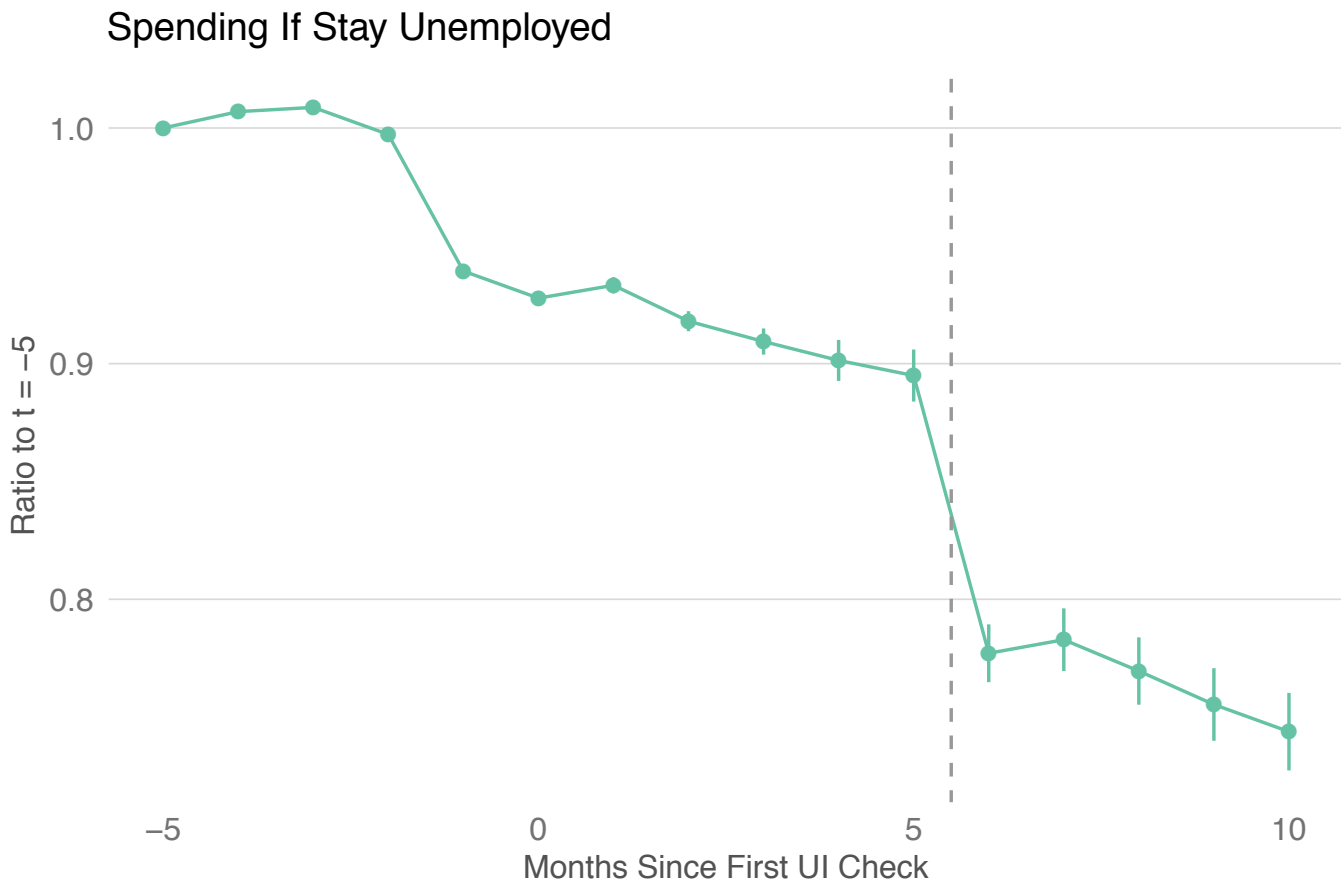
Much less than 1-1 because savings behavior changes, spousal labor supply, borrowing from friends, etc. (i.e., self-insurance).

A recent study by Ganong-Noel AER'19 uses bank account data to follow people through UI spells.

$\Rightarrow$ Finds big effects of UI benefit exhaustion on consumption, especially for groups with high replacement rates or low wealth.

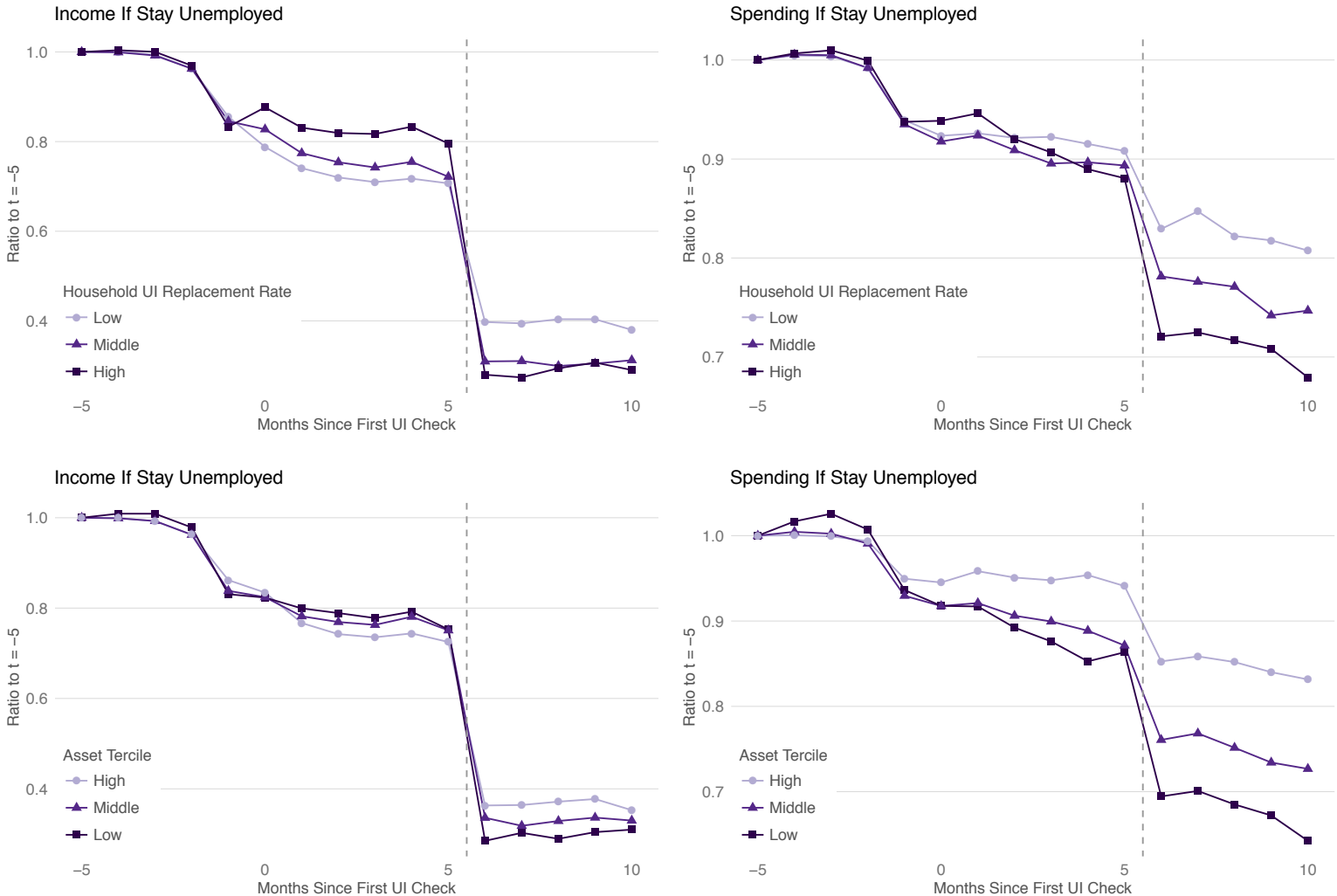
Figure 2: Income and Spending If Stay Unemployed





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 the simple economic model, is improvements in **match quality**.

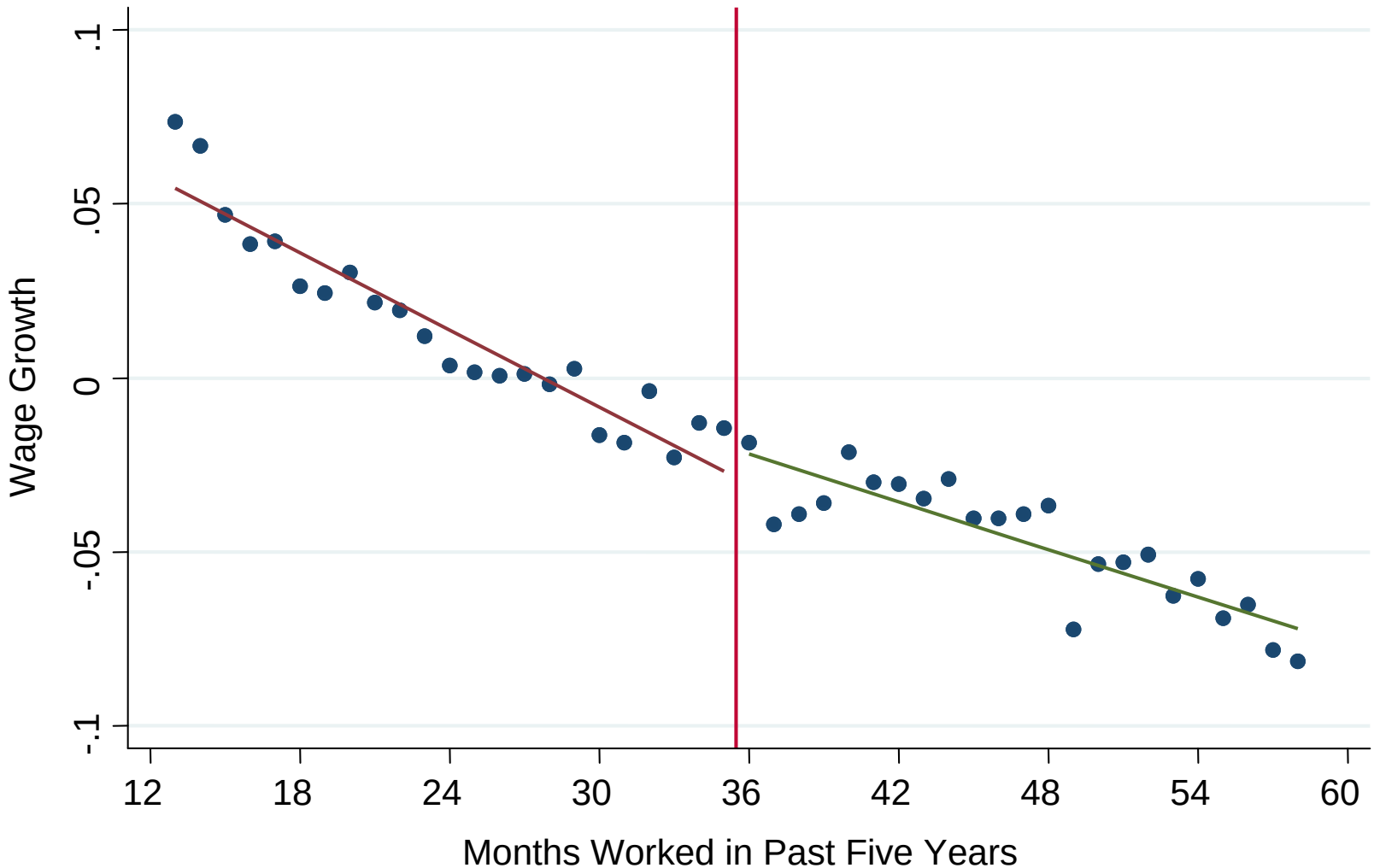
Are people forced to take worse jobs because they have to rush back to work to put food on the table?

E.g., An engineer starts working at McDonalds.

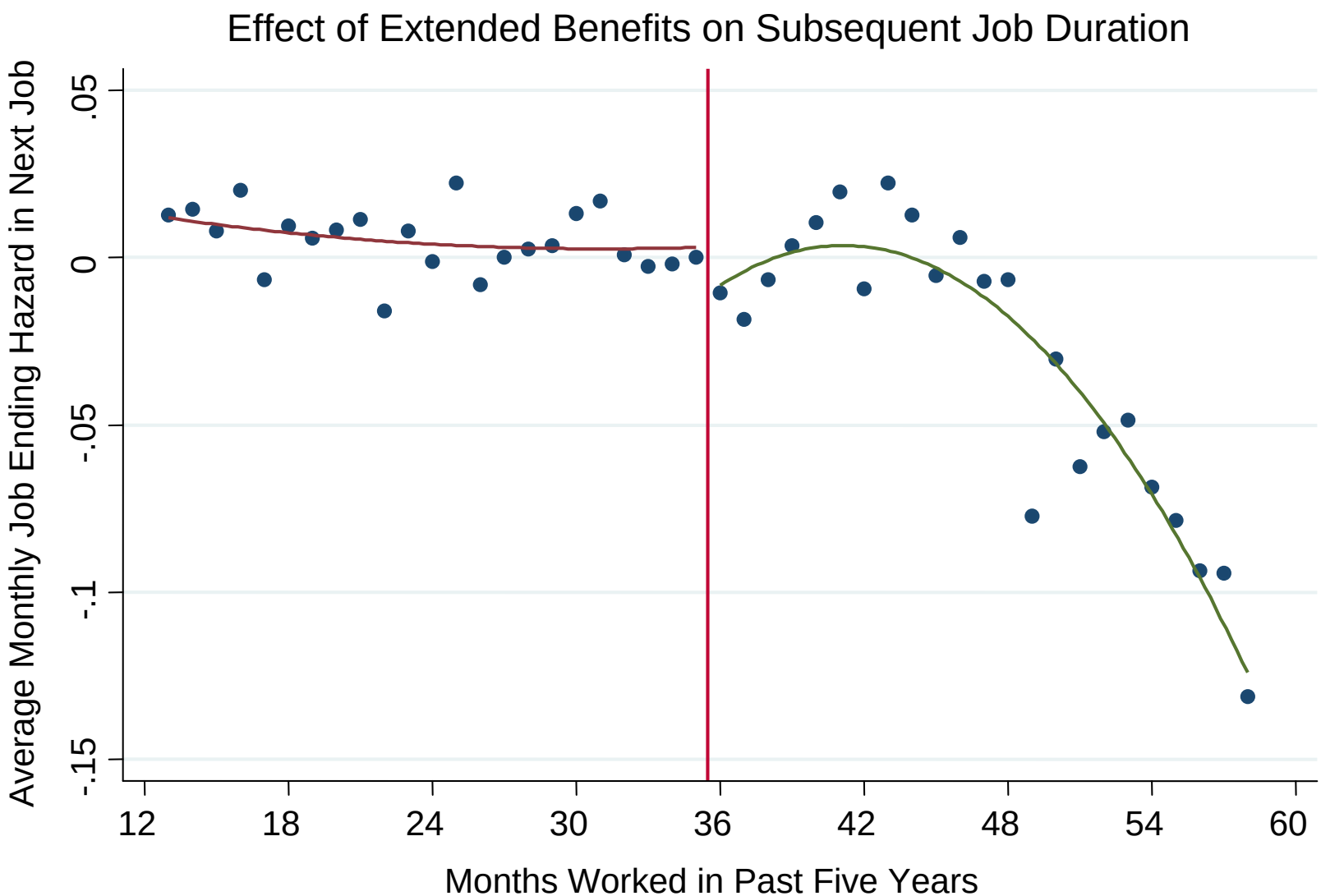
We can investigate whether people who got higher benefits and took longer to find a job are better off years later.

Card-Chetty-Weber (2007) exploits the **regression discontinuity** and finds no long-term match benefit on subsequent wage or job duration.

Card, Chetty, Weber (2007)



Card, Chetty, Weber (2007)



Summary of Empirical Findings on UI

(1) Higher benefit level implies longer unemployment durations (moral hazard cost).

(2) Higher benefit level implies more consumption while unemployed (consumption smoothing benefit).

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

$\Rightarrow$ This implies that providing some UI is desirable, but the UI replacement rate should be below 100%.

Moral hazard cost during deep recessions (such as COVID) seems smaller.

$\Rightarrow$ It makes sense to make UI more generous in recessions.

Disability Insurance

Disability is conceptually close to retirement: some people cannot 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 cannot work due to disability.

US Disability Insurance

(1) Federal program funded payroll tax, pays social security benefits to disabled workers under retirement age (benefits are also based on past earnings)

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

(3) Eligibility requirements: medical proof of being unable to work for at least a year, some prior work experience, five months waiting period with no earnings

(4) Social security examiners rule on applications. Appeal possible for rejected applicants. Imperfect process with many errors (Parsons AER'91)

(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 2021, there were 9.2 million DI beneficiaries ($\approx 5\%$ of the working-age population).

(2) In 1960, less than 1% of the working-age population was on DI.

$\Rightarrow$ Very rapid growth

(3) Growth particularly strong during recessions: early 1990s, late 2000s. Slight decline from 10.3m in 2013 to 9.2m in 2021

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

Beneficiaries in Current-Payment Status

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.

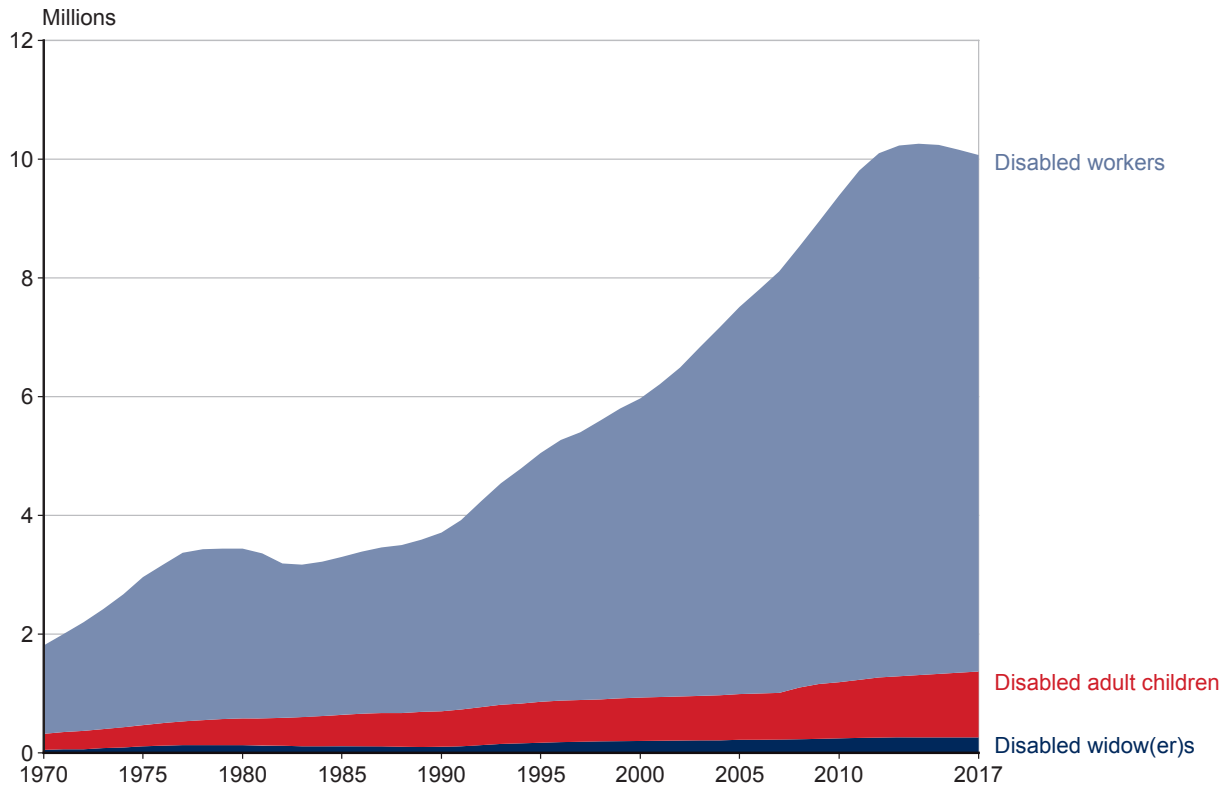
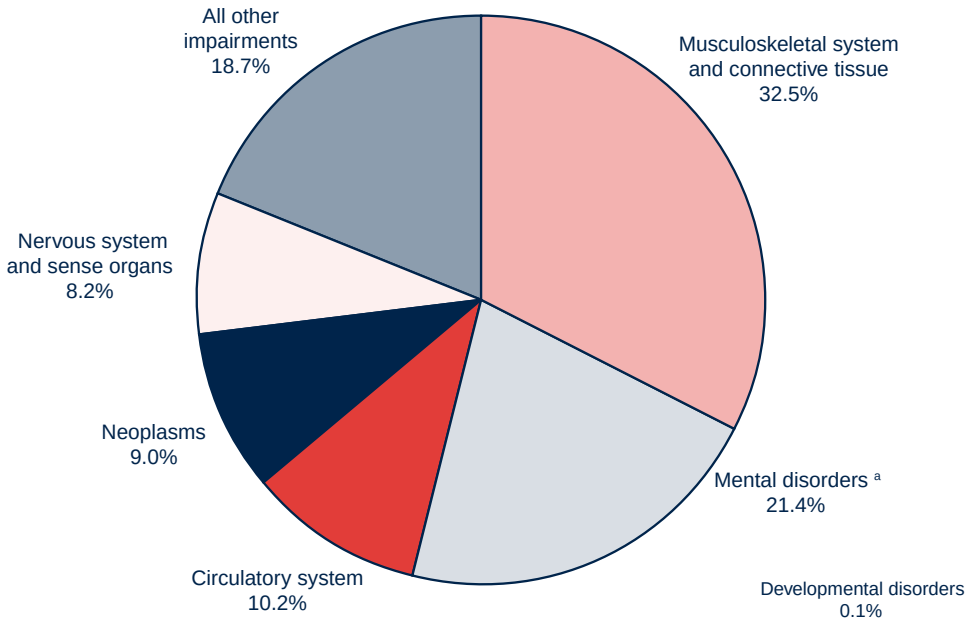


Chart 10.
Disabled-worker awards, by selected diagnostic group, 2010

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: conduct an 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 (i.e., incorrect rejection of a disabled person) and Type II errors (i.e., letting a non-disabled person benefit).

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 the labor force participation 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.

Von Waechter-Manchester-Song AER'11 replicate Bound using better administrative data and confirm these 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 estimate the causal effect of DI on work using natural variation in DI examiners' stringency and high-quality administrative data.

Idea: (a) Random assignment of DI applicants to examiners and (b) examiners vary in the fraction of cases they reject.

$\Rightarrow$ Valid instrument of DI receipt

Result: DI benefits reduce by 28 percentage points P(employment).

$\Rightarrow$ DI has an impact but fairly small (consistent with Bound AER'89)

NB: This estimates the causal effects of DI on working behavior for marginal cases: applicants who are admitted by a lenient judge but rejected by a tough judge (i.e., the average effect on all DI recipients likely smaller).

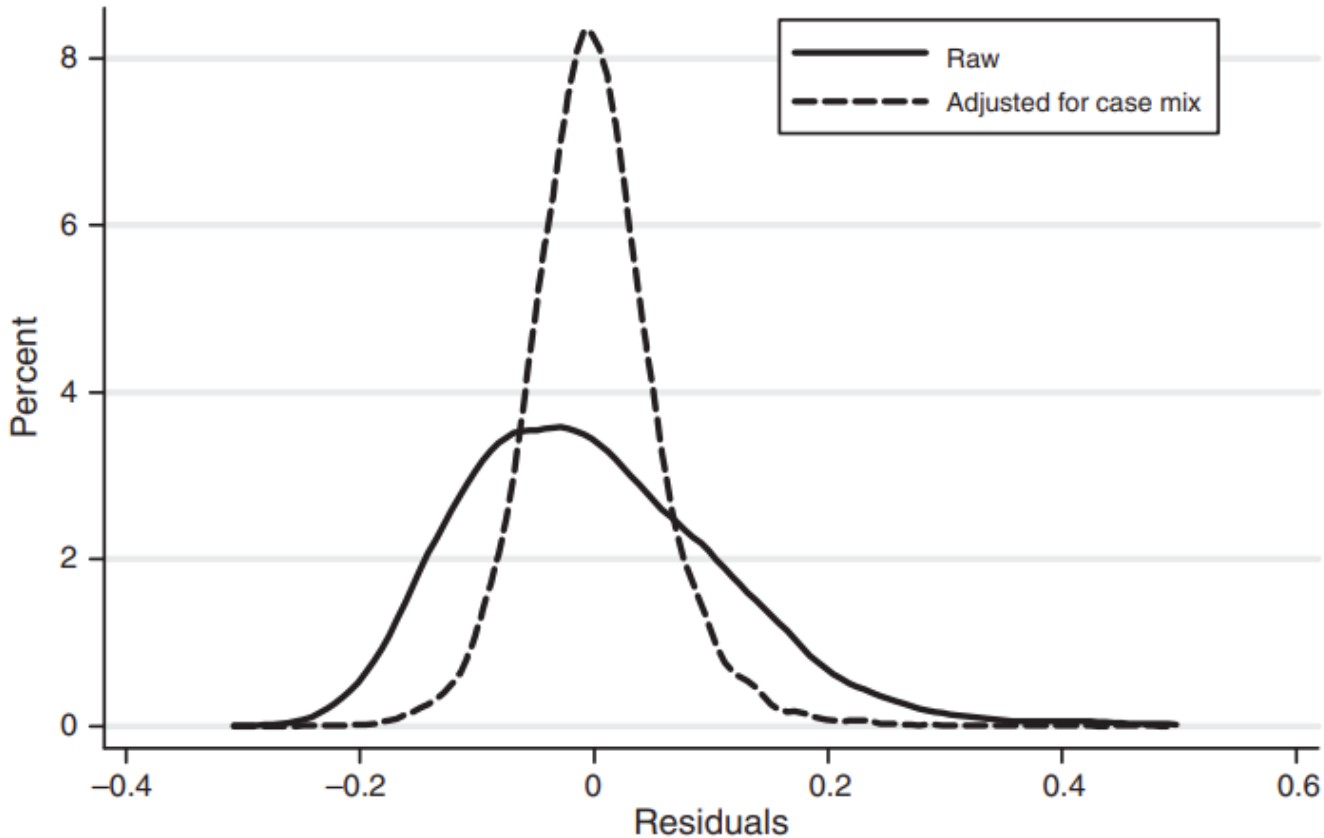


FIGURE 3. DISTRIBUTION OF EXAMINER DEVIATIONS FROM DDS MEAN INITIAL ALLOWANCE RATE

Note: Caseload characteristics include DDS office, age, preonset earnings, body code, three-digit zip code, terminal illness diagnosis, and decision month.

Source: 2005–2006 DIODS data.

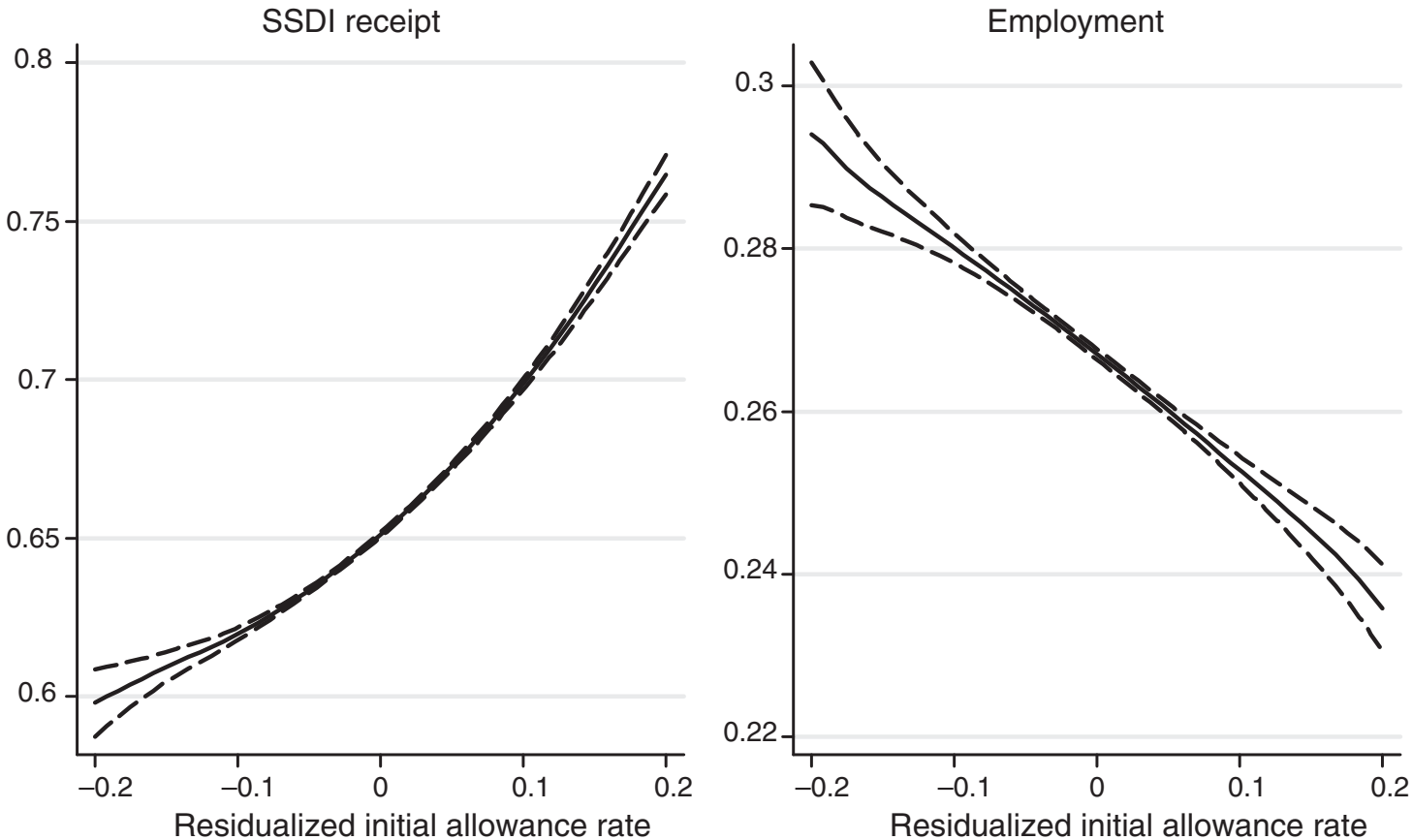


FIGURE 4. SSDI RECEIPT AND LABOR SUPPLY BY INITIAL ALLOWANCE RATE

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.

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 screening/treatment and indemnity

Indemnity payment replaces roughly two-thirds of lost wages.

WC payments have high replacement rates $\approx 90\%$ on average.

Substantial variation across states in benefit levels.

Workers Compensation (WC): Institutional Features

(1) WC is a mandated benefit; there is no explicit tax, but firms are 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 the private sector determines them.

$\Rightarrow$ Insurance companies charge high-risk firms more.

(2) An important feature of WC is 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.

Moral Hazard in Workers' Compensation

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

E.g., Back pain is very hard to verify.

Is it true that there is a substantial moral hazard problem?

Strategy 1: Exploit the timing of injuries.

$\Rightarrow$ "Monday effect" (faking weekend injuries into work injuries)

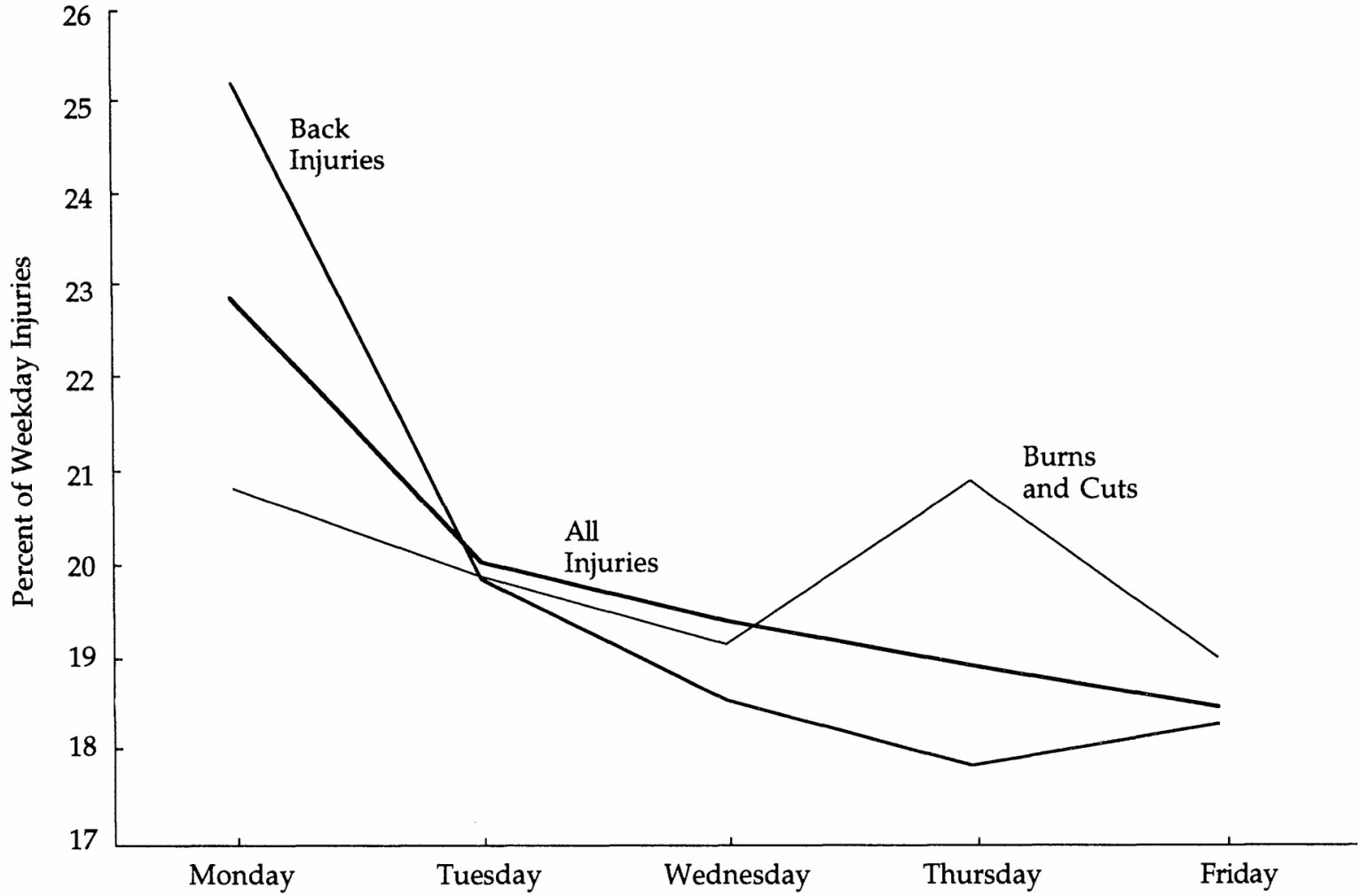


Figure 1. Distribution of Weekday Injuries.

Source: Card and McCall 1996

Moral Hazard in Workers' Compensation

Strategy 2: Examine the effect of WC benefit levels on durations using a difference-in-differences strategy (Meyer, Viscusi, Durbin 1995).

Some reforms in Kentucky and Michigan increased benefits for high-earning workers (but not low-earning workers) in the late 1980s.

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

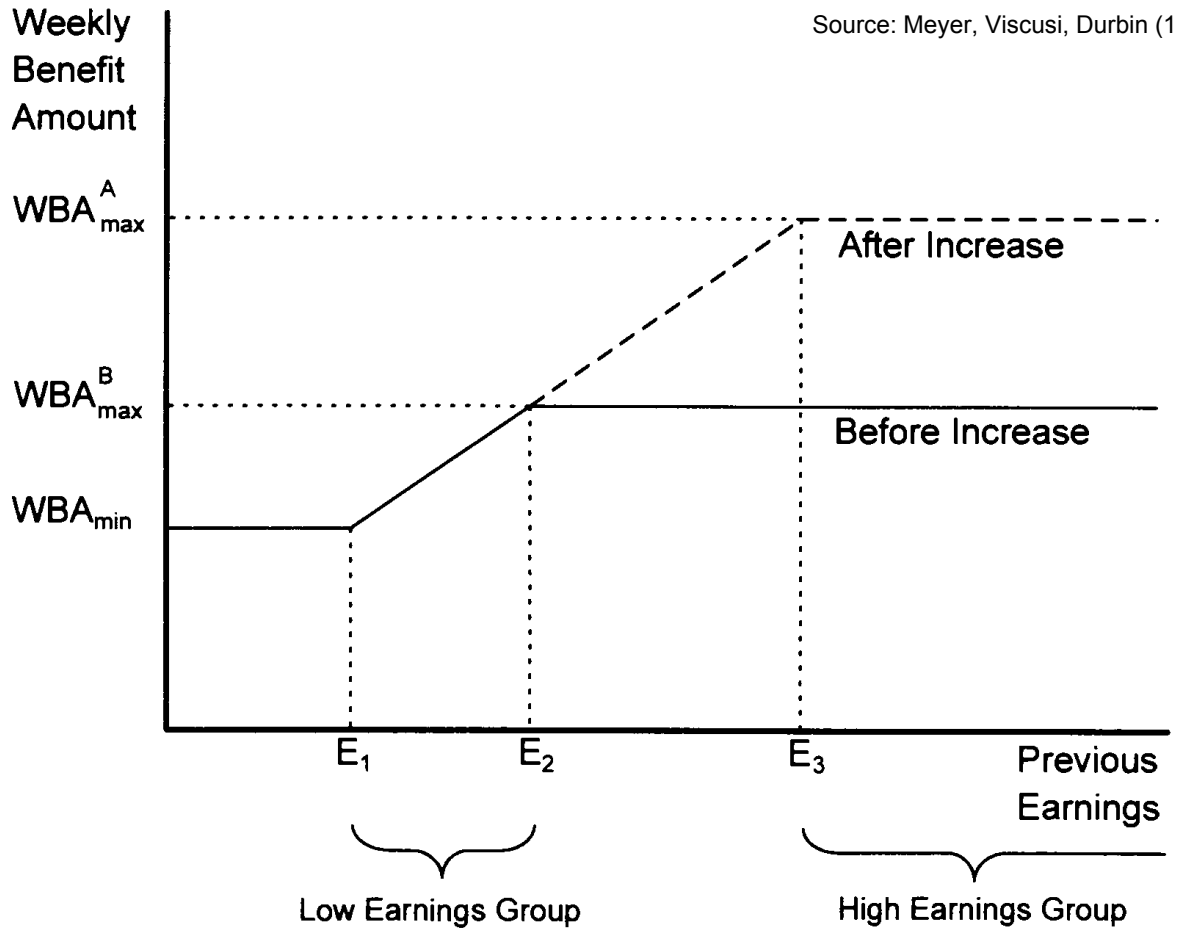


FIGURE 1. TEMPORARY TOTAL BENEFIT SCHEDULE BEFORE AND AFTER AN INCREASE IN THE MAXIMUM WEEKLY BENEFIT

Variable	Kentucky			Michigan		
	Before increase (1)	After increase (2)	Percentage change (3)	Before increase (4)	After increase (5)	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		Low earnings		Differences		Difference in differences
	Before increase (1)	After increase (2)	Before increase (3)	After increase (4)	[(2)−(1)] (5)	[(4)−(3)] (6)	[(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, we must weigh this against the benefits to reach policy conclusions.

WC gives people more time to heal after injury without rushing them back to work and leads to higher consumption while out of work.

No clean empirical 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 inform policymakers' decisions for program reforms.

Jonathan Gruber, Public Finance and Public Policy, Fifth Edition, 2016 Worth Publishers, Chapter 14

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