Revisiting the Employment Effects of the Americans with Disabilities Act

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ADA: Americans with Disabilities Act (July 1990)

- Goal:
 - Remove "[b]arriers to employment, transportation, public accommodations, public services, and telecommunications" that "have undermined efforts by individuals with disabilities to receive an education, become employed, and be contributing members of society"
- ADA had a broad definition of disabilities:
 - "physical or mental impairments that limit substantially one or more major life activities, including (but not limited to) working"
- To facilitate work, ADA introduced three main components:
 - Accommodation mandate ("reasonableness" criterion)
 - 2 Non-discrimination clause ("equal pay" criterion)
 - Tax subsidies and incentives

Literature

- Various papers have assessed impact of ADA on employment of workers with disabilities
 - Acemoglu and Angrist (2001) and DeLeire (2000)
- Consensus so far: ADA has had a *negative* effect on employment of disabled workers
- Main finding attributed to the unintended consequences of the policy on firms' employment decisions
 - ADA imposes new costs on firms: mandates accommodations (hiring costs) and increases the risk of litigation costs due to wrongful employment termination (firing costs)

Who Is a Disabled Worker?

• Focus so far has been on individuals with work disabilities

- "Do you have a health problem or disability which prevents you from working or which limits the kind or amount of work you can do?" (CPS)
- "Do you have a physical, mental, or other health condition that limits the amount or kind of work you can do?" (SIPP)
- But many individuals have disabilities that while (potentially) protected by ADA, do not necessarily limit or prevent work
 - Impact of ADA on individuals with non-work disabilities has not been studied (Kruse and Schur, 2003)
 - They have been treated as part of the "control" population

This Paper

- Goal: Revisit evidence on effects of ADA on employment and wages
- Contributions:
 - We look at much longer period than previous studies: long-term consequences of ADA
 - We consider impact on broader group of individuals with disabilities
 - We propose a DMP framework to interpret findings and decompose effects of policy

Summary of Results

- We confirm main finding in the literature: Employment of individuals with work disabilities has *declined* and so have their wages
- Observe to the second secon
- For WD workers, job-finding rates decline and job-separation rates increase. Opposite patterns for the NWD
- Model: Subsidizing accommodation costs and compositional shifts towards "lower-quality jobs" are key for explaining employment and wage effects

- We use several waves from the Survey of Income and Program Participation (SIPP) covering the 1984-2010 period
- Topical modules provide rich info on type and extent of disabilities, but with some comparability issues
- Following Acemoglu and Angrist (2001): focus on those aged 21-58

Definitions

- Individuals with work disabilities (WD) answer "Yes" to the question: "Do you have a physical, mental, or other health condition that limits the amount or kind of work you can do?"
- Individuals with non-work disabilities (NWD) answer "No" to the previous question but report:
 - 2+ limitations in ADL
 - 2 Limitations to "kind or amount of work around the house" they can do
 - Any physical or sensory functional disability (walking, seeing, etc.)
 - Mental health issues (e.g., anxiety)

Shares w/ or w/out Disabilities



In the 1990 and 1996 waves, more questions defining disabilities were addedWe do not use the extra questions added in the 1996 wave (except for robustness)

Who Is in the NWD Group?

- Someone who is **not** limited in the amount or kind of work he/she can do, and yet reports, e.g.:
 - using a cane, crutches, a walker, or a wheelchair to get around
 - having difficulty lifting and carrying something as heavy as 10 lbs.
 - having difficulty having his/her speech understood
 - having a mental or emotional condition (e.g., anxiety)
 - ▶ ...
- Two observations:
 - Having a disability \neq Being unable to work
 - Mobility impairment: Construction worker vs Call center operator
 - Being non-work disabled \neq Being employed
 - Fixed costs of work, Discrimination, etc.

Pre-ADA Statistics

	(1)	(2)	(3)
	No	Work	Non-Work
	Disability	Disability	Disability
Employed	0.81	0.46	0.60
Weekly Salary (empl.)	467.7	357.7	410.4
Hourly Wage (empl.)	11.46	9.54	10.15
Blue-collar occupation (empl.)	0.40	0.48	0.43
Age	36.75	41.84	39.21
White	0.86	0.83	0.84
Black	0.11	0.15	0.14
College education	0.51	0.32	0.41
Male	0.49	0.51	0.37
Married	0.66	0.55	0.61

Replicating and Extending Previous Findings

- We follow Acemoglu and Angrist's (2001) (AA) sample selection rules
 - Define as disabled those with a work disability
 - Assume those with non-work disabilities are part of the control population
 - 3 Define a person employed if with a job in the reference month

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	(1)	(2)	(3)
	ĊPŚ	SÌPP	SÌPP
	1987-1996	1986-1997	1984-2010
Work Disability	-0.390***	-0.306***	-0.306***
	(0.002)	(0.004)	(0.004)
After 1991	0.024*	0.022	-0.019
	(0.010)	(0.013)	(0.012)
Work Disability $ imes$ After 1991	-0.044***	-0.042***	-0.119***
	(0.003)	(0.006)	(0.004)

Controls: Year dummies, age dummies, race dummies, education dummies and region dummies, and interaction of year dummies with age, race, education and region dummies.

Considering a Broader Disability Group

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	SIPP, 1984-2010				
	Narrow Definition	Broader Definition			
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Disability	-0.306*** -0.295*				
	(0.004)	(0.004)			
After 1991	-0.019	-0.027**			
	(0.012)	(0.012)			
Disability $ imes$ After 1991	-0.119***	-0.069***			
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• We now turn to study the behavior of these two groups separately

Employment Effects: SIPP 1984-2010

	All	Men	Women
Work D.	-0.309***	-0.345***	-0.277***
	(0.003)	(0.004)	(0.005)
Non-Work D. Only	-0.183***	-0.174***	-0.160***
	(0.009)	(0.012)	(0.012)
After 1991	-0.022*	0.019	-0.044**
	(0.012)	(0.020)	(0.019)
Work D. $ imes$ After 1991	-0.118***	-0.114***	-0.111***
	(0.004)	(0.005)	(0.006)
Non-Work D. Only $ imes$ After 1991	0.119***	0.114***	0.114***
	(0.010)	(0.014)	(0.015)
N	425,478	202,898	222,580

Controls: Year dummies, age dummies, race dummies, education dummies and region dummies, and interaction of year dummies with age, race, education and region dummies.

Hourly Wage Effects: SIPP 1984-2010

	All	Men	Women
Work D.	-0.207***	-0.225***	-0.205***
	(0.008)	(0.011)	(0.012)
Non-Work D. Only	-0.105***	-0.106***	-0.048**
	(0.019)	(0.028)	(0.025)
After 1991	-0.127***	-0.133***	-0.052
	(0.026)	(0.046)	(0.039)
Work D. $ imes$ After 1991	-0.067***	-0.086**	-0.027*
	(0.011)	(0.014)	(0.015)
Non-Work D. Only $ imes$ After 1991	-0.026	-0.031	-0.040
	(0.022)	(0.032)	(0.028)
N	284,015	146,378	137,637

Controls: Year dummies, age dummies, race dummies, education dummies and region dummies, and interaction of year dummies with age, race, education and region dummies.

Extensions and Robustness

- We consider event studies for both employment and wages
- Employment dynamics: For WD workers, job-finding rates *decline* and job-separation rates *increase*. Opposite patterns for the NWD
- We consider different definitions of NWD:
 - Adding questions introduced in 1996
 - Using 1984-2010 consistent questions (2+ ADL) Evidence
- We present suggestive evidence that ADA did not change disability reporting patterns because of "stigma removal" or because of "receiving job accommodations" Evidence

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 - future versions: exempt firms (small businesses)

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 - compositional change in the types of jobs created post ADA
 - future versions: exempt firms (small businesses)
- Counterfactuals: Introducing one ADA pillar at a time
 - NWD: Subsidies paid by general taxation increase wages and employment, but leave 1/3 without accommodation
 - NWD: Equal pay alone reduces employment and increases wages, but leaves almost everyone without accommodation

Conclusion

- The ADA was a landmark legislation aimed at improving the working conditions and the employment of individuals with disabilities
- We revisit the evidence on its impact using a longer time period and a more expansive definition of disabilities
 - Confirm the finding from previous work of *negative* impact on employment of the work-disabled both in short and long run
 - However, employment among individuals with non-work disabilities increases
- Subsidizing accommodation costs and compositional shifts towards lower-quality jobs are key to explaining employment/wage effects among the NWD in light of equal-pay requirement

Did Reporting Patterns Change Due to ADA?

- Individuals who would have reported a work disability in the pre-ADA era may benefit from post-ADA job accommodations and, because of that, report they are not work disabled
 - This would reduce the work disability share
- Individuals *who would have not* reported a work disability in the pre-ADA era due to stigma may switch to truthfully reporting their work disability due to ADA removing the stigma of being disabled
 - This would increase the work disability share
- These two forces may keep disability shares stable over time, while employment effects are ambiguous

Some Suggestive Evidence

- ADA removed stigma against the disabled from all contexts, not just work
 - Younger individuals may report more (because of reduced stigma) or less (because of receiving job accommodation)
 - ► Older individuals (≥ 65) face only the reduced stigma effect, so we should see them reporting relatively more than the young
 - In fact, there is no significant age difference Evidence
- Workers in small firms (≤ 25) are not covered by ADA
 - If work disability reports are related to receiving job accommodations, we should see a larger decline in work disability reports among workers employed in large firms than among workers employed in small firms
 - ► In fact, we find the *opposite* Evidence

Reporting Patterns in Small vs. Large Firms

- Use CPS 1988-2010 as it includes information on firm size
- Define: Large firm= $\mathbf{1}\{N > 25\}$
- Run a simple diff-in-diff for the probability of reporting a work limitation

	(1)	(2)
Large firm	-0.010***	-0.009***
	(0.001)	(0.001)
Post-ADA	-0.005***	-0.005***
	(0.001)	(0.001)
Large firm $ imes$ Post-ADA	0.001^{*}	0.001^{*}
	(0.001)	(0.001)
Demographics	Ν	Y
Obs.	1,725,999	1,725,999

Note: Demographics include age, race dummies, gender dummy, education dummies.



Reporting Patterns for Young vs. Old Workers

- Use again CPS 1988-2010
- Define: Older worker= $1{65 \le Age \le 75}$
- Run simple diff-in-diff for probability of reporting work limitation

	(1)	(2)
Older worker	0.005***	0.006***
	(0.001)	(0.001)
Post-ADA	-0.0003	-0.0001
	(0.0002)	(0.0002)
Older worker $ imes$ Post-ADA	0.0001	0.0004
	(0.0006)	(0.0006)
Demographics	N	Ý
U .		
Obs.	3,635,403	3,635,403

Demographics include race dummies, gender dummy, education dummies, firm size dummies.



Targeted Moments

• We target pre-ADA between-group differences and post-ADA within-group differences (relative to non disabled)

		WD		0	D	
		Data	Model	Data	Model	
Pre-ADA employment	$E_d - E_{ND}$	-0.311	-0.414	-0.187	-0.230	
		[0.01]		[0.01]		
Pre-ADA separ. prob.	$s_d/s_{ m ND}$	2.027	2.031	1.480	1.650	
		[0.95]		[1.49]		
Pre-ADA wages	$\log(w_d/w_{\rm ND})$	-0.208	-0.207	-0.106	-0.169	
		[0.02]		[0.03]		
Pre-ADA accomm. share	$\mathrm{E}_{d}^{1}/\mathrm{E}_{d}$	0.333	0.329	0.333	0.317	
(Daly and Bound, 1996)	-					
Post-ADA Δ emplovment	$\Delta(E_d - E_{ND})$	-0.116	-0.091	0.123	0.082	
1 5	(()))	[0.01]		[0.01]		
Post-ADA Δ separ. prob.	$1 + \Delta (s_d - s_{ND}) / s_d^{Pre-ADA}$	1.513	0.890	0.658	1.004	
	a a a a a a a a a a a a a a a a a a a	[0.69]		[0.69]		
Post-ADA Δ log wages	$\Delta \log(w_d/w_{ND})$	-0.066	-0.058	-0.026	-0.037	
	,	[0.02]		[0.03]		



Hiring Costs: Accommodation

- We obtain estimates of the k_d^{FIX} distribution from JAN
- Scrape info on:
 - list of suggested products with direct links to products' vendors, prices, etc. Example
 - > available by condition, which we match with SIPP respondents reporting a disability



Firing Costs: Cost of Discrimination Lawsuits

- We obtain estimates of the distribution of $\mathbb{E}[k_d^{\mathrm{SEP}}]$ from EEOC
- Define: $\mathbb{E}[k_d^{\text{SEP}}] = \Pr(\text{file}|\text{sep.}) \times \Pr(\text{win}|\text{sep.}, \text{file}) \times \mathbb{E}[\text{Award}_d]$
- EEOC provides info on:
 - number of ADA cases opened
 - number of ADA cases concluded with a "merit resolution" (about 20% of all cases)
 - size of monetary awards following lawsuits, separately by condition Back



Estimates

		Va	lue	Source
Discount factor	β	0.996		5% annual discounting
Meeting function	α	0.5	500	Petrongolo and Pissarides (2001)
	A_L, A_H	0.153	0.123	Normalize $\theta_{\text{ND},i} = 1$
Barg. power	γ	0.5	500	Efficiency (ND submkt)
Vacancy cost	k_L, k_H	0.175	0.278	UN to E flows (ND submkt)
Subs. accomm. costs	$(1 - \tau)$	$\min\{0$	$0.5k, \overline{k}\}$	Tax code
Distr. accomm. costs	$H(k^{\rm FIX})$	Empirio	cal CDF	JAN
Exp. separ. costs	$\mathbb{E}[k^{\text{SEP}}]$	Empirio	cal CDF	EEOC
Skill distn.	log s	N(0.354	4, 1.228)	First Stage
Match prod. distn.	$\log \varepsilon$	N(-1.39	0,1.157)	First Stage
Production Function	$\phi_{L,0}, \phi_{L,1}$	1.0, 0.410		First Stage
	$\phi_{H,0}, \phi_{H,1}$	0.957, 0.553		Low skill share in (ND submkt)
		WD	OD	Source
Flow cost accomm.	$k_L^{\text{FLOW}}/\mathbb{E}[w]$	0.019	0.035	Model estimation
Flow cost accomm.	$k_H^{\text{FLOW}}/\mathbb{E}[w]$	0.447	0.801	Model estimation
Production shift	ϕ_d	0.869	0.933	Model estimation
Eff. units, unaccomm.	e	0.712 0.794		Model estimation
Value non-market time	$\mathbb{E}[z]/\mathbb{E}[w]$	0.711	0.661	Model estimation
Prob. match shock	δ_L	0.143	0.111	Model estimation
Prob. match shock	δ_H	0.069	0.078	Model estimation

Employment Effects: SIPP 1986-2010

	(1)	(2)
	Baseline	Consistent
		Definition
WD	-0.310***	-0.308***
	(0.004)	(0.004)
OD	-0.186***	-0.355***
	(0.009)	(0.018)
After 1991	-0.024*	-0.020
	(0.012)	(0.012)
WD $ imes$ After 1991	-0.116***	-0.117***
	(0.004)	(0.004)
OD imes After 1991	0.123***	0.145***
	(0.011)	(0.030)
Obs.	401,899	401,899

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Event-Study: Employment





Event-Study: Hourly Wages



Men Women

JAN Example

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	Alternative Input Devices	can be configured to be used by eld from using a one handed keyboard	her the left or the right hand. Due to the may need some time to learn how to ty	e placement of the keys, individual pe in a different way.	Is that may benefit			er 🕹
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	Alternative Mice	Amazon.com, Inc.	 Koolertron Single-Handed Progr Red Switch 	ammable Mechanical Keyboard w	ith OEM Gateron			ã
	Alternative Mice - Limiting Tremors		Redragon KS85 DITI One-Hande	ed RGB Mechanical Gaming Keybo	serd			
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	Communication (AAC) Device	Boundless Assistive Technology	Matias 508 Keyboard					
	Auto-dialors	Cadan Assistive Technologies						
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Event Study: Employment of Men



Event Study: Employment of Women



Work disabled
 Non-work disabled

Event Study: Hourly Wages of Men



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Event Study: Hourly Wages of Women



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Policy Counterfactual: Change Subsidy Rate

- Accommodation is mandatory
- Costs cannot be passed on through wages
- Separations are costly

Work Disabled: Baseline Policy



Work Disabled: No Subsidy Cap



Work Disabled: 75% Subsidy



Work Disabled: 75% Subsidy Without Cap



Work Disabled: 25% Subsidy



Work Disabled: No Subsidy



Non-Work Disabled: Baseline Policy





Non-Work Disabled: No Subsidy Cap





Non-Work Disabled: 75% Subsidy



Non-Work Disabled: 75% Subsidy Without Cap



Non-Work Disabled: 25% Subsidy



Non-Work Disabled: No Subsidy



Policy Counterfactuals: Only Add Subsidy (No Cap)

- Accommodation is optional
- Allow wages to be bargained
- No separation costs

Work Disabled: Baseline Policy



Work Disabled: 50% Subsidy





Work Disabled: 75% Subsidy





Work Disabled: 25% Subsidy





Non-Work Disabled: Baseline Policy





Non-Work Disabled: 50% Subsidy





Non-Work Disabled: 75% Subsidy





Non-Work Disabled: 25% Subsidy





ADA Policy Counterfactuals: Work Disabled

	ΔE	$\Delta \log w$	$\mathrm{E}^{\mathrm{accom}}/\mathrm{E}$	$E_{\rm L}/E$
Baseline ADA policy	-0.093	-0.056	1.000	0.735
Mandate only	-0.022	-0.087	1.000	0.746
Equal pay only	-0.075	0.074	0.029	0.011
Subsidy only				
25% subsidy	0.034	-0.016	0.456	0.332
50% subsidy	0.070	-0.007	0.650	0.379
75% subsidy	0.088	0.105	0.964	0.257

In the pre-ADA period, $E^{accom}/E = 0.33$ and $E_L/E = 0.26$.

ADA Policy Counterfactuals: Non-Work Disabled

ΔE	$\Delta \log w$	$\mathrm{E}^{\mathrm{accom}}/\mathrm{E}$	$E_{\rm L}/E$
0.085	-0.042	1.000	0.972
-0.013	-0.024	1.000	1.000
-0.067	0.040	0.022	0.066
0.033	0.002	0.485	0.476
0.060	0.012	0.587	0.546
0.072	0.034	0.720	0.549
	ΔE 0.085 -0.013 -0.067 0.033 0.060 0.072	$\begin{array}{c ccc} \Delta E & \Delta \log w \\ \hline 0.085 & -0.042 \\ \hline -0.013 & -0.024 \\ -0.067 & 0.040 \\ \hline 0.033 & 0.002 \\ \hline 0.033 & 0.002 \\ \hline 0.060 & 0.012 \\ \hline 0.072 & 0.034 \\ \end{array}$	$\begin{array}{c cccc} \Delta {\rm E} & \Delta \log w & {\rm E}^{\rm accom}/{\rm E} \\ \hline 0.085 & -0.042 & 1.000 \\ \hline -0.013 & -0.024 & 1.000 \\ -0.067 & 0.040 & 0.022 \\ \hline 0.033 & 0.002 & 0.485 \\ \hline 0.033 & 0.002 & 0.485 \\ \hline 0.060 & 0.012 & 0.587 \\ \hline 0.072 & 0.034 & 0.720 \\ \hline \end{array}$

In the pre-ADA period, $E^{accom}/E = 0.33$ and $E_L/E = 0.34$.