Project Title: "Revisiting the Employment Effects of the Americans with Disabilities Act"

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Aims: In this project, we aim to revisit the employment effects of the Americans with Disabilities Act (ADA) of 1990 by considering a more comprehensive notion of disability that encompasses not just limitations that prevent work but also limitations that affect home production and activities of daily living. This distinction may be important as the accommodation requirements mandated by the ADA may impact individuals with work- and non-work limitations of different ages in different ways, in terms of both workers' well-being and productivity and the policy's associated costs. We will primarily use data from the Survey of Income and Program Participation (SIPP) to address these questions. We will also explain the results we obtain through the lenses of a job search model of the labor market. To produce a research manuscript, the project deliverable, we will:

- analyze data to provide new evidence on the employment of individuals with different ages and types of disabilities from the SIPP and other sources (the National Beneficiary Survey (NBS) and data on accommodation requirements and costs);

- estimate an equilibrium search and matching model of the labor market to account for the employment and wages of disabled and nondisabled workers with different levels of labor market experience and how the ADA has differentially affected them;
- measure the welfare implications of the ADA on disabled workers characterized by different ages and types and intensity of disability, as well as gender, race, ethnic, and other demographic characteristics;
- evaluate the impact of the distinct components of the policy, in particular its no-discrimination and accommodation requirements, and alternative designs of it.

Significance: Our goal is to study why, by how much, and for which groups of disabled workers, employment and wages improved or worsened as a consequence of the ADA. The study is relevant for understanding the labor market experience of an aging workforce, since work-related and non-work-related disabilities are most likely to emerge in the later part of the life cycle. The ADA was designed to grant disabled individuals civil rights protection against discrimination in all areas of public life. A stated goal of the policy was to promote the employment of disabled individuals able to work by making employment opportunities more accessible to them. To achieve this goal, the policy required employers to provide disabled individuals with reasonable accommodation, for instance, by offering part-time or modified work schedules, and by acquiring equipment and facilities or modifying existing ones. From the very start, however, the accommodation requirement of the policy proved controversial. Although work accommodation benefits disabled workers and the public at large through the infrastructure it provides, its cost primarily falls on employers. Among others, DeLeire (2000) and Acemoglu and Angrist (2001) indeed found that the ADA had "backfired," that is, has had a negative effect on the employment of disabled workers, since the large anticipated

costs of litigating claims of wrongful dismissals, resulting from the ADA's requirement of no discrimination, and the burden of the ADA's accommodation provision have ended up discouraging firms from employing workers with disabilities.

This literature, however, has focused on individuals with limitations related only to their ability to work (market production), or work limitations. In contrast, we plan to assess the impact of the ADA on a larger and more heterogeneous sample of individuals with disabilities. In particular, using detailed health data from the SIPP, we distinguish between individuals with work limitations, the focus of extant literature, and those with non-work limitations, defined as individuals reporting (physical, sensory, or mental) limitations that are non-work-related, limitations to performing activities of daily living ("basic" home production), or limitations to their ability to work at home ("advanced" home production). We ask if, under a more expansive view of disability, the ADA may have had a positive employment effect on individuals who, although strictly not work-limited, experience other types of disability that yet impact their productivity and performance at work. By the statutory definition of disability used by the SSA, these may be individuals who have some medical disability but would be considered vocationally able to work (if formally assessed). Our preliminary findings confirm that the ADA has had a *negative* effect on the employment of individuals with work limitations. Since our analysis extends to the 25 years that followed the introduction of the ADA, we offer a longer-term analysis of the policy's impact. Unlike the literature, however, we also find that the ADA has had a large and statistically significant *positive* effect on the employment of individuals with non-work limitations, including older ones, even when severe.

These preliminary results set the stage for both theoretical and empirical questions we plan to address. On the theoretical side: How can imposing constraints and costs on firms increase

employment? We have developed a simple theoretical framework that explains these findings. Intuitively, the costs of employment termination and accommodation introduced by the ADA for disabled workers are investment-type costs, which have two opposite effects when labor markets are subject to frictions to the matching of workers and firms: firms are less likely to hire, but, conditional on hiring, less likely to fire disabled workers. Accordingly, both the job creation rate and the job destruction rate decrease for disabled workers after the introduction of the ADA. Whenever accommodation is successful at improving disabled workers' productivity, though, the job destruction rate decreases more than the job creation rate does and so employment overall increases. On the empirical side: Do the data provide evidence of this mechanism for individuals with non-work limitations? Which health- and non-health-related characteristics do these individuals tend to exhibit? We have started to analyze the attributes that set these workers apart from workers with more traditional work-related limitations. For the years we have analyzed so far, we find that non-work limited individuals who have benefited from the policy tend to be in the second half of their working life, have higher and more general human capital and to be employed in human-capital intensive occupations, for which accommodation tends to be less extensive, cheaper, and most likely to be effective, at jobs whose duration has increased after the ADA has been introduced, as consistent with our model.

Our project contributes to the literature on the ADA, one of the major policies implemented over the past 30 years in the United States, by revisiting and qualifying the commonly held view that the policy has had an adverse impact on the employment of disabled workers. We depart from the literature in four key dimensions: 1) we study different subgroups of disabled workers; 2) we account for the dynamic effects of the ADA on workers and firms' behavior; 3) we evaluate its impact

on both the job creation and job destruction margins of firms' employment decisions; and 4) we measure the heterogeneous employment and welfare implications of the policy over time. The literature, instead, has focused on individuals who only suffer from work disabilities, abstracting from the high degree of heterogeneity in disabled workers' health, productivity, and labor market experiences; relied on often static models of just worker behavior; and ignored the complex dynamic interaction between firms' incentives to hire and fire workers, thereby missing the impact of the policy that we are starting to uncover. We will argue that accounting for heterogeneity in age, health, and productivity among individuals with disabilities may offer a more comprehensive way of assessing the "success" of the ADA, since the policy may have provided disabled individuals unable to work greater protection against discrimination and social stigma while making work feasible for disabled individuals able to work, thereby prompting for this latter group a virtuous cycle of greater employment, productivity, higher wages, and improved career prospects.

The project will have potentially important policy implications. In particular, it will focus on: a) understanding which programs, including the ADA, Earned Income Tax Credit (EITC), and Unemployment Insurance (UI), are most successful at stimulating disabled workers' participation in labor markets, why these programs differentially affect different sub-populations of disabled individuals by age and type of disability, and how they could be amended and their complementarities better exploited for them to be most effective for both young and old disabled workers; b) helping address questions like: what makes work accommodation successful for non-work-disabled individuals but not for work-disabled ones? Are different groups of disabled workers, in particular older ones, differentially discriminated in the labor market and is discrimination, when we detect it, more likely to take the form of fewer job opportunities, lower wages or insufficient

accommodation? c) providing a broader sense of how well Social Security Disability Insurance (SSDI) is serving the different age groups of the disabled population, especially the older ones, when disability is interpreted more comprehensively, not just based on the current definition used in the SSA's disability determination process; d) identifying differences in the effect of the ADA and SSDI by age, race, ethnicity, and gender, which are dimensions often overlooked by the current literature and that intersect both the work-disabled and non-work-disabled groups; and, finally, e) examining the dynamic transition from the non-work-disabled status to the work-disabled status for older workers in order to quantify the evolution of the SSDI's burden and benefits over the life cycle.

Data: We plan to use data from SIPP, NBS, and from the Job Accommodation Network (JAN). These three data sets contain information on the socio-demographic characteristics, health and functional status, health insurance, interest in work, barriers to work, use of services, employment, wages, work accommodation, and work accommodation costs for workers with disabilities of different age, gender, race, ethnicity, and socio-economic background. Most data from SIPP and NBS are in the public domain. The NBS contains information on why an individual is not working, what "barriers" to work the individual faces, and an individual's plans to work (which SIPP does not have). The NBS restricted version collects medical data as detailed as SIPP. It would be ideal (albeit not key) to have access to such data. JAN survey data on employers and provided accommodations are not publicly available and we plan to apply for access, but stress that these data are also not key for the successful completion of the project. The publicly released portion of these data would still be informative for our exercise.

Methods: Our project will rely on frontier econometric and computational methods and will consist of three parts. First, we will rely on event-study analyses to document the impact of the ADA on the

employment and wages of disabled workers distinguished by their age and type of disability. Since SIPP covers a period of time right before and long after the passing of the ADA, we will estimate specifications of the form:

$$E_{it} = \alpha + \sum_{s=-k}^{m} \beta_s D_{is}^{w} T_s + \sum_{s=-k}^{m} \gamma_s D_{is}^{nw} T_s + X_{it}^{'} \delta + e_{it},$$

where E is employment (alternatively, wages w), D^w and D^{nw} are dummies for work- and non-work related limitations, *T* are year dummies, *s*=0 corresponds to the year in which the ADA was passed, and *k* and *m* represent the number of years before and after the ADA was introduced. The coefficients β_s and γ_s measure the impact of the policy on the two disability groups, and δ measures how effects differ by age and other demographic characteristics. These analyses will be followed by an investigation of the combination of observable characteristics that best predict which groups of disabled workers have been more or less likely to benefit from the policy with special focus on their age, gender, racial, ethnic, and socio-economic attributes based on machine-learning methods, including clustering and lasso.

In the second part, we plan to use frontier equilibrium modelling and solution methods to account for the impact of the ADA on the heterogeneous demand and supply sides of the labor markets for abled and disabled workers of different ages. In particular, we will develop, solve, and estimate a search and matching model of the labor market for disabled and non-disabled workers in the spirit of Mortensen and Pissarides (1994, 1999). This second part will consist of a benchmark model, which allows us to analytically characterize the employment and wage impacts of the ADA and identify the mechanisms behind the evidence provided in the first part, and of a quantitative model, which we will use to estimate the effects of the policy on the employment and wages of different groups of non-disabled and disabled workers. In the third part, we plan to decompose the impact of the ADA

in the impact of its main requirements - no-discrimination and reasonable accommodation - and to perform counterfactual exercises so as to evaluate its design (such as whether the accommodation requirement of the ADA should be amended in any way) and potential interactions with other programs, such as EITC, UI, and SSDI, that stimulate the employment and transition from unemployment to work for disabled workers able to work and support disabled workers unable to work, especially older ones.

Budget Outline: Summer support for the three PI's (capped at 25k) for the summer of 2022, plus 12% indirect costs to sub-recipient institutions.

References

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