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A model of Social Security Disability Insurance using matched SIPP/Administrative data

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ABSTRACT

We study Disability Insurance (DI) application behavior in the US using matched SIPP and administrative data over 1989–1995. Certain state-contingent earnings projections and eligibility probabilities are central to the analysis. We find evidence for a small work disincentive effect of DI that seems to be restricted to a subset of the DI beneficiaries, including low earning groups such as blue collar workers and those subject to economic dislocation. Processing time, Medicare value, unemployment, private health insurance, and health shocks are some of the major factors that affect application propensity. The behavioral response of female workers to various parameters of the DI program is found to be quite different from that of males.

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Executive summary

We estimate an econometric model of Social Security Disability Insurance (DI) application behavior, using the 1990, 1991, and 1992 panels of the Survey of Income and Program Participation (SIPP) matched to Social Security Administration data for 1989–1995. The resulting matched file captures a rich set of individual-specific antecedents of the application decision, including: demographics, self-reported health and activity limitations, household composition and family finances, earnings histories, program eligibility status, occupational characteristics, disease-specific Medicare expenditures, and hypothetical DI benefits. Exploiting these data, we focus less on population-wide effects than on subgroup effects with direct policy implications. State-contingent earnings projections and eligibility probabilities as well as individual-specific benefit calculations are all central to the analysis. The main findings are:

- No more than 37% of DI beneficiaries would return to sustained work if they did not receive DI benefits. Using the labor force participation rate of rejected disability applications as a benchmark, Bound (1990) estimated that less than 50% of the DI beneficiaries would have returned to sustained work were they not receiving DI benefits. When pre-application differences in the labor market attachment of allowed and denied applicants are considered along with the observed

work efforts by beneficiaries, the estimated work disincentives associated with DI benefits are notably smaller.

- Our estimated elasticity of applications with respect to benefit size is significant only for males (0.496). The overall elasticity is small compared to previous estimates based on cross-sectional data, explaining little of the extraordinary DI enrolment growth over the period.
- We find significant differences in the effect of DI benefits on applications not only by gender, but by pre-application earnings level. The effect is greatest for low earners. Our findings suggest that the moral hazard problem associated with DI is mainly restricted to males and, among males, it is mainly restricted to low earners, such as blue collar workers and those more subject to economic dislocation or stagnant real wages. Hence, the work disincentive associated with the DI benefit may contribute to recent growth in allowances via the vocational grid, which is often an eligibility path for low earners with blue collar jobs. We infer that such subgroups may be good candidates for vocational rehabilitation and return-to-work incentives.
- Individual medical eligibility probabilities have a substantial direct effect on the propensity to apply. Our estimate of the elasticity is 1.54 – much larger than earlier studies. The findings underscore the fundamental role of medical factors in the application decision, notwithstanding the role of vocational and economic elements for key applicant subgroups. We do not find state level variation in allowance rates to be significant in explaining application behavior at the individual level.
- The Medicare variable has a large, statistically significant effect on the decision to apply for DI benefits, with an elasticity of 0.24. Our analysis dispels any presumption that all DI applicants have

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uniformly high health costs. For example, the costs of persons with cancer or AIDS are several times higher than those of persons with mental problems or a stroke and ten times higher than those of persons with hypertension or deafness. Based on diagnosis-specific cost information, in our sample the average expected value of Medicare for applicants is more than 50% higher than that of non-applicants. The availability of Medicare benefits boosts the average probability of application by nearly 12%. Ours is the first study to capture the effect of the expected value of medical insurance on application behavior.

- Local area unemployment rates significantly affect applications. The elasticity is 0.30 for males and females combined; however, the effect is higher for males (0.42). Our unemployment variable explains a large part of the growth in disability applications in the early 1990s. This finding suggests the need for a policy focus on rehabilitation, return to work (including the Ticket to Work effort), and the vocational grid.
- We find a significant effect for variations in processing time across states and over time on applications. The elasticity is significant for males (0.40), but not for females.
- Overall, the disability application equation for females is quite different from that for males. Although medical eligibility probability has a significant impact on both females and males, key policy variables like the DI benefits and processing time do not seem to affect female application behavior. This is consistent with the fact that whereas the male labor force participation rate has decreased during last few decades, the opposite is true for women. The singular behavioral response of female workers to parameters of the DI program is intriguing and warrants further research.

1. Introduction

Disability Insurance (DI) and Supplemental Security Income (SSI) are the two largest federal programs providing cash benefits to people with disabilities. Both are administered by the Social Security Administration. Established in 1954, DI provides cash assistance to people with disabilities (and their dependents or survivors) under the age of 65 who have enough work experience to qualify. Created in 1972, SSI is a means-tested income assistance program that provides monthly payments to adults or children who have disabilities and whose income and assets fall below statutory levels. During 1982–2002, the number of disabled workers receiving benefits under DI doubled (increasing from 2.6 million to 5.5 million), while annual payments quadrupled (increasing from about \$13.8 billion to \$55.5 billion). By 2002, another 2.8 million working-age individuals with disabilities were receiving \$18.5 billion in annual SSI federal benefits. The associated medical costs under Medicare and Medicaid programs for the disabled amounted to an additional \$132 billion. Entitlement spending on this scale, growing unabated in more recent years, argues not only for more analysis of economic incentives underlying applications decisions, but also for an expanded focus on the complex procedure for determining eligibility. Not surprisingly, researchers both within the Social Security Administration (SSA) and in academia have been trying to understand the causes of program growth so that policy makers can respond.¹

The growth of the disability programs is the consequence of both decreasing terminations and increasing applications and

awards. The declining death rates of beneficiaries and the lower average age of new awardees are generally considered to be the main reasons for the falling terminations. On the other hand, changes in eligibility rules, the adjudicative climate, and business cycle effects are considered to be the predominant reasons for increasing applications, see [Rupp and Stapleton \(1995\)](#). The DI Program, like all insurance programs, is susceptible to an unintended consequence—the so-called moral hazard problem. With the male labor force participation rate falling during the last three decades, economists have sought to explain this phenomenon by the availability and increasing generosity of the DI program, cf. [Parsons \(1980\)](#). Recent economic research on disability has attempted to measure the impact of a few key policy parameters on application behavior, e.g., the disability benefit level, the individual-specific eligibility probability, and the average processing time for disability applications. Here we focus on these factors and many others, but we do so in a way that tests for differential behavior for subgroups within the pool of potential DI applicants. This approach acknowledges and accommodates the heterogeneity of DI applicants.

Historically, researchers have faced a daunting data problem in studying the growth in disability programs. On the one hand, administrative data, tied to day-to-day operations, have no information at all on non-applicants and, for applicants, little socioeconomic information needed to understand application behavior. On the other hand, household surveys provide information on non-applicants and on a range of socioeconomic details; however, it has been difficult to determine the pool of prospective DI eligibles based on self-reported survey responses. In this paper we study DI application behavior using matched Survey of Income and Program Participation (SIPP) and SSA administrative data files representing 1989–1995.

Our study offers several advantages over previous studies: (1) Most previous studies have used data from the 1960s and 1970s, even though the nature of DI enrollment has dramatically changed since 1984. (2) We match SIPP data with SSA disability determination records in such a way that the majority of our sample members are observed in the survey before the time of application. One endemic problem with almost all studies mentioned above is that application decisions were observed many years before socioeconomic and health information were collected from the survey respondents. For instance, in [Kreider \(1999\)](#) and [Kreider and Riphahn \(2000\)](#), the disability application dates are 2–7 years before the survey window. (3) The value of Medicare coverage for Social Security Disability Insurance beneficiaries is almost 50% of the average DI benefit level. We have estimated the expected value of medical care under Medicare for each individual by using recent research on disease-specific capitation rates (cf. [Ash et al. \(2000\)](#)) and used it successfully in the application equation. (4) We pay special attention to pre-application health shocks in the earnings equations such that they are not subsumed as part of unobserved heterogeneity and self-selection. There is a great deal of variation in earnings streams prior to application, and in recovery rates based on the earnings of denied applicants. Moreover, these earnings profiles are not based on self-reports, but are obtained from SSA's Summary Earnings Records (SER) data. (5) Three counterfactual earnings projections are central to the analysis: projected earnings if not applying, if allowed, and if denied. The projection of earnings if not applying used in this paper is based on non-applicants after correcting for application self-selection. Unlike the aforementioned studies we generate the hypothetical benefits if allowed from an SSA benefit calculator, rather than estimating it by regression methods using self-reported data. Typically researchers have generated potential disability benefits for all sample members from the self-reported disability receipts of the beneficiaries. (6) Our sample covers both

¹ See, for example, [Halpern and Hausman \(1986\)](#), [Leonard \(1986\)](#), [Haveman et al. \(1991\)](#), [Arts and de Jong \(1992\)](#), [Lahiri et al. \(1995\)](#), [Kreider \(1999\)](#), [Gruber and Kubik \(2002\)](#), [Benítez-Silva et al. \(1999\)](#), [Hu et al. \(2001\)](#), and [Autor and Duggan \(2006\)](#). Further references are available in recent survey articles by [Bound and Burkhauser \(1999\)](#) and [Haveman and Wolfe \(2000\)](#).

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