

# **Disability Benefits, Consumption Insurance, and Household Labor Supply**

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## Abstract

While a mature literature finds that Disability Insurance (DI) receipt discourages work, the welfare implications of these findings depend on two rarely studied economic quantities: the value that individuals and families place on disability benefits; and the full cost of DI allowances to taxpayers, summing over DI transfer payments, benefit substitution to or from other transfer programs, and induced changes in tax receipts. We comprehensively assess these missing margins in the context of Norway's DI system, drawing on two strengths of the Norwegian environment. First, Norwegian register data allow us to characterize the household impacts and fiscal costs of disability receipt by linking employment, taxation, benefits receipt, and assets at the person and household level. Second, random assignment of DI applicants to Norwegian judges who differ systematically in their leniency allows us to recover the causal effects of DI allowance on individuals at the margin of program entry. Accounting for the total effect of DI allowances on both household labor supply and net payments across all public transfer programs substantially alters our picture of the consumption benefits and fiscal costs of disability receipt. While DI denial causes a significant drop in household income and consumption on average, it has little impact on income or consumption of married applicants; spousal earnings and benefit substitution entirely offset the loss in DI benefit payments. To develop the welfare implications of these findings, we estimate a structural model of household labor supply that translates employment decisions of both spouses into revealed preferences for leisure and consumption. We find that the welfare benefit of DI receipt is considerably larger for single and unmarried individuals as compared to married couples, suggesting that it might be efficient to lower replacement rates or impose stricter screening on married applicants.

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## Introduction

Over the past 50 years, disability insurance (DI) rolls have risen dramatically in many OECD countries. In the U.S., SSDI benefits receipt has risen from less than 1 percent to nearly 5 percent of the non-elderly adult population. In many European countries, the increases are even more striking, from 1 percent to 7 percent in the U.K and from 2 percent to almost 10 percent in Norway. These increases have made DI one of the largest transfer programs in most OECD countries. In the U.S., for example, outlays for DI exceed those for food stamps, traditional cash welfare, or the EITC.<sup>1</sup> For families without small children, DI is often the primary cash benefit available after unemployment benefits run out and it has therefore become an increasingly important component of the social safety net.

To limit DI program growth, several countries have significantly tightened disability screening criteria, and many others are considering similar policies.<sup>2</sup> These enhanced gatekeeping policies can reduce the fiscal burden of disability insurance, both by lowering the DI

caseload and, if rejected applicants return to work, by increasing tax revenue. At the same time, stricter screening may result in net welfare losses for individuals and families that value public disability insurance at more than its fiscal cost.<sup>3</sup> To assess the costs of disability allowances to taxpayers and the benefits to disability recipients requires information on two economic quantities that are rarely measured: the economic value that individuals and families place on receipt of disability benefits; and the full cost of DI allowances to taxpayers, summing over DI transfer payments, benefit substitution to or from other transfer programs, and induced changes in tax receipts. Credibly estimating these quantities is typically hindered both by a lack of comprehensive linked data measuring these many outcomes, and by the difficulty of distinguishing the causal effects of DI receipts from the many unobserved factors that simultaneously determine disability status, earnings, tax payments and transfer receipts, and consumption.

This paper overcomes both the measurement and the identification challenge in the context of Norway's DI system to offer empirical evidence on the fiscal costs, consumption benefits and welfare implications of DI receipt. Our work draws on two strengths of the Norwegian environment. First, Norwegian register data allow us to characterize the household impacts and fiscal costs of disability receipt by linking employment, taxation, benefits receipt, and assets at the person and household level. Our measure of fiscal costs includes virtually all forms of government cash transfers and revenues from (direct) taxes, accounting for changes in labor supply and substitution to other transfer programs. Our measures of household impacts of DI receipt include net government transfer payments from all sources, employment and earnings of DI applicants (both allowed and denied) and their spouses, and household consumption expenditure imputed from successive annual observations of income and wealth. Second, we address the threats to identification by exploiting the random assignment of DI applicants to Norwegian judges who differ systematically in their leniency. This approach recovers the causal effects of DI allowance on individuals at the margin of program entry. As a measure of judge leniency, we use the average allowance rate in all other cases a judge has handled. This leniency measure is highly predictive of judicial rulings in incumbent cases but uncorrelated with case characteristics.

Our first set of analyses estimating the causal effects of DI receipt on earnings, consumption, and fiscal costs yields three main findings. First, denying DI benefits to applicants on the margin of program eligibility induces an increase in annual earnings of approximately \$6,600, which is about 40 percent of the annual DI transfer benefit denied. Second, DI denial lowers average household income and consumption by 15 and 16 percent—a reduction of more than 60 cents for every dollar in net government spending averted—implying that DI receipt provides partial consumption smoothing. Third, DI denials have starkly different impacts on applicants according to marital status. Among single and unmarried (though possibly cohabiting) applicants, DI-induced changes in net government spending have large direct impacts on household income and consumption: each public dollar saved through DI denial reduces household income by nearly 90 cents. Conversely, DI denials do not decrease the household income or consumption of married applicants. The reason is that household labor supply and benefit substitution entirely offset the loss in DI benefit payments. While DI benefits do not affect consumption of married applicants, they impose considerable costs on other taxpayers through higher transfers and reduced payroll tax revenues. Thus, accounting for the total effect of DI allowances on household labor supply and net payments across all public transfer programs alters our picture of the consumption benefits and fiscal costs of disability receipt.

To develop the welfare implications of these findings, we estimate a structural model of household labor supply that translates employment decisions of both spouses into revealed preferences for leisure and consumption. The model allows for non-separable preferences between labor supply and consumption and the utility of leisure among spouses. Brought to the data, the model provides a good fit to the causal estimates of the impact of DI allowances on employment and total household income obtained non-structurally, and moreover, provides plausible parameter estimates for labor supply elasticities. We use the estimated model to compute the welfare benefits of DI receipt—by which we mean the cash equivalent value of receiving a DI allowance—and to perform counterfactual analyses that help us infer the extent to which spousal labor supply and reapplication attenuate the welfare loss from being denied DI at the appeal.<sup>4</sup> Among married couples, there is a small but positive welfare benefit of DI receipt, due to increased leisure of applicants and their spouses. By comparison, the gains in welfare of single and unmarried applicants are relatively large, and almost entirely due to increased disposable income. These results suggest that it might be efficient to lower replacement rates or impose stricter screening on married applicants. Of course, any policy that conditioned disability screening and benefits on marital status would have to account for likely policy-induced shifts in marriage formation and dissolution.

Our paper contributes to a growing literature on the causes and consequences of the growth in DI rolls (for a review, see [Autor & Duggan, 2006](#); [Autor, 2011](#); [Liebman, 2015](#)). While the mature literature on the causal impacts of disability benefits focuses primarily on the employment and earnings effects of DI allowance, little is known about the fiscal costs or consumption benefits.<sup>5</sup> [Meyer & Mok \(2013\)](#) and [Kostol & Mogstad \(2015\)](#) over to our knowledge the only prior study that comprehensively documents changes in income and consumption that follow self-reported changes in health and disability. [Low & Pistaferri \(2012\)](#) provide simulations from a calibrated life-cycle model to compare the insurance value and incentive costs of DI benefits. Our identification strategy, which uses judge assignments to isolate quasi-experimental variation in disability allowances, builds on three recent studies using U.S. data to estimate labor supply impacts of DI receipt. Exploiting quasi-experimental variation in DI allowances stemming from differences in disability examiner leniency, [Maestas et al. \(2013\)](#) and [Autor et al. \(2014a\)](#) find that DI receipt substantially reduces earnings and employment of applicants. [French & Song \(2013\)](#) pursue a similar strategy—exploiting variation in the leniency of appeal judges rather than initial examiners—and find comparable labor supply effects of DI receipt among appellants. Our study makes two contributions to this active literature. It combines quasi-experimental variation in judicial disability determinations with extensive register data on disability applicants and household members to provide novel evidence on the consumption benefits and fiscal costs of DI receipt in a setting where we can credibly address concerns about omitted variables bias.<sup>6</sup> Second, by integrating causal impact estimates along multiple dimension, the subsequent structural model estimation offers a welfare assessment of these findings.

Our paper also contributes to a rich literature assessing the response of consumption to both anticipated and unanticipated income changes.<sup>7</sup> Most work in this literature assumes exogenous labor supply, focuses on a single earner, or imposes restrictions on the nature and type of insurance available to families. A notable exception is [Blundell et al. \(2012\)](#), who estimate a life cycle model with two earners making consumption and labor supply decisions.<sup>8</sup> Consistent with our findings, Blundell et al. find an important role for consumption insurance through household labor supply, while self-insurance through savings and borrowing matter

less.<sup>9</sup> A related literature tests for the added worker effect, i.e., an increase in spousal labor supply induced by negative income shocks to the other spouse (Lundberg, 1985). Cullen & Gruber (2000) review this literature and highlight the difficulty in drawing credible inferences from observational data. One challenge is to locate a plausibly exogenous income shock to one spouse that does not directly affect the labor supply of the other spouse, thus overcoming the problem of reflection or simultaneity. Another difficulty is to control for correlated unobserved spousal heterogeneity in earnings capacity, health, and the taste for work, all of which might bias estimates of an added worker effect. A third challenge is to avoid or model correlated shocks across spouses. If, for example, a general economic downturn causes a negative income shock to a primary earner, his or her spouse's market wage will likely fall concurrently, thus biasing downward the estimated added worker effect. Our research design overcomes these challenges by identifying a plausibly exogenous income shock (DI denial) that directly affects only one member of the household (the DI applicant), thereby providing a strongly confirmatory test of the added worker effect in the DI context.

When considering the interpretation and generality of these findings, we emphasize two caveats. First, our structural model permit us to estimate the economic value of the transfer component of DI benefits—that is, the cash equivalent value of a DI award—but do not encompass the ex ante insurance value of the DI system for potential applicants. Since this insurance value is doubtless positive and potentially large, our estimates should not be interpreted as a full accounting of the welfare value of the DI system. Second, the estimates obtained by the quasi-experimental variation in judicial disability determinations correspond to the local average treatment effect of DI allowance or denial for individuals who could have received a different allowance decision in the appeal process had their case been assigned to a different judge. Since the work capacity of individuals at the margin of program entry is likely to differ from that of inframarginal individuals, we are cautious in extrapolating the causal estimates obtained here to the broader population at large or to other programmatic settings.

Nevertheless, the economic consequences of DI receipt for marginal DI claimants are relevant for policy. In both Norway and the U.S., the rise in DI rolls in recent decades appears driven in significant part by de jure or de facto changes in the screening criteria applied to claimants reporting difficult-to-verify disorders, such as back pain or mental disorders (Autor & Duggan, 2006; Kostol & Mogstad, 2014). Logically, reforms aimed at altering DI screening criteria will likely have the largest impacts on applicants on the margin of program entry, a substantial share of whom are applicants with difficult-to-verify disorders. Not coincidentally, this description also corresponds closely to the marginal appellants whose outcomes identify the causal effects estimates and model-based welfare calculations above. These observations suggest that while the estimates provided by this paper are not directly generalizable to the full DI population, they are likely to be informative for policymaking.

## Notes

1 In 2011 the U.S. paid out \$129 billion to 10.6 million disabled workers and their families, with an additional \$33 billion worth of disability benefits from the SSI program for poor Americans and \$90 billion in Medicaid for disabled workers (OASDI Trustees Report, 2012). In 2009, DI payments constituted 1.8 percent of GDP in the U.S. and 2.3 percent of GDP across the European OECD-countries (OECD, 2010).

2 For example, the U.S. tightened the criteria for new disability awards in the late 1970s and introduced an aggressive program of continuing disability reviews in 1980; however, Congress responded by halting the reviews and, in 1984, liberalizing the program's screening criteria along several dimensions. Another example is the Netherlands; in 1994, the eligibility criteria were tightened and the growth in DI rolls reversed.

3 In the U.S., all private disability insurance is provided through employer-based group policies. These policies 'wrap-around' the public SSDI system, so that most of the wage insurance risk and all of the medical cost risk is ultimately borne by the public program (Autor et al. , 2014b). There is not a strong standalone private market in disability insurance, likely because of adverse selection.

4 While our structural analysis estimates the cash equivalent value of the transfer component of the DI system, it does not seek to estimate the ex ante insurance value of the DI system (that is, the value of reallocating income between different health states) since our research setting does not provide credible identification for the relevant parameters.

5 This literature includes Parsons (1980), Bound (1989), Gruber (2000), Chen & van der Klaauw (2008), and Kostol & Mogstad (2014) as well as the methodologically related papers on DI discussed immediately below. See also Autor & Duggan (2003) and Borghans et al. (2014) for empirical evidence on the interaction between disability insurance and other transfer programs in the U.S. and Netherlands.

6 Our analysis uses the same identification strategy as Dahl et al. (2014) though applied to a distinct question and set of outcomes.

7 The literature is reviewed in Blundell et al. (2008), Meghir & Pistaferri (2011) and Blundell et al. (2012).

8 A complementary exception is Finkelstein et al. (2015), who directly estimate the insurance value of Medicaid in-kind public health plan benefits using variation from a randomized controlled trial. Distinct from our focus, their work (a) abstracts from labor supply considerations since labor supply appears unaffected by Medicaid provision in their setting (Baicker et al. , 2014); and (b) estimates both the transfer and ex ante insurance values of public benefits provision, whereas we estimate only the first component.

9 See also Fadlon & Nielsen (2015) who find that wives offset income losses following the death of a spouse through increased labor supply.

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