The Effect of the Disability Insurance Application Decision on the Employment of Denied Applicants

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January 2018

Introduction

The SSDI is a social insurance program for:

- **Eligible** workers
- Who are **disabled**, and
- Unable to engage in **SGA**

In expectation of getting on to the SSDI rolls, most applicants do not work while they are in the process of determination

Work discouragement aspect of SSDI application process adversely affects the applicant' post-application labor supply

Motivation of the Paper

Existing literature primarily focuses on the benefit receipt effect of SSDI using denied applicants as counterfactual of receipients

The effect of application process on denied applicants is unaccounted for in those analyses

In this paper, I estimate the causal effect of SSDI application on the post-application employment of denied applicants

Facts:

- More people than ever are applying and denied for SSDI
- Denied applicants make up two-thirds of applicants - a total of 1.8 million individuals in 2013 alone

Contributions of the Paper

First paper to analyze the causal effect of SSDI on employment of denied applicants using the non-applicants as a control group

The post-application employment of denied applicants at ages 50-58 is as much as 49 percentage points lower in the short-run

Using a IV approach I find SSDI causes a 36 percentage points reduction in employment of denied applicants in the short-run

The findings of this paper suggest that the existing literature is not fully capturing the spillover effect of SSDI on applicants

LitRev

Data

The data used in this paper comes from:

- The *Health and Retirement Study* (HRS)
- SSA's administrative geographic identification of the HRS respondents
- SSDI allowance rate at the state Disability Determination Services (DDS) level provided by SSA

The HRS is a nationally representative longitudinal household survey of older Americans

11 waves of HRS data from 1992 to 2012 are used in this paper

Geographic identifier allows matching individuals to the allowance rate of the state of application

The Comparison Group

Potential comparison group: all non-applicants who have worked enough to pass the "technical denial"

Role of "hassle cost" and "stigma cost" associated with the SSDI application in finding the appropriate comparison group

Comparison group in this paper: individuals observed to be non-applicants between age 50 to 58 (inclusive), who later filed SSDI application on or after age 60

Thus, the sample of analysis is comprised of individuals who are eventual SSDI applicants

LSAgeYear Demography OtherChar SelfHealth MedCondition

Identification Strategy

Estimate a causal model of labor supply using SSDI denied applicants and eligible non-applicants of age 52 to 61 like:

$$y_i = X_i\beta + \gamma DI_i - s_i + \epsilon_i$$

y_i is the employment status of individual i 2-3 years after a reference age (for denied the reference is the application age)

X_i includes observable characteristics at the reference age and changes in time-varying attributes

$DI_i = 1$ if individual i applied SSDI first time at the reference age and never received benefits

s_i represents unobserved factors which is uncorrelated with any remaining idiosyncratic error term ϵ_i

Identification Strategy *cont...*

If $E[s_i|DI_i] \neq 0$, then OLS gives a biased estimate of γ

If $\gamma < 0$ and if s_i is positively correlated with the SSDI application, then the OLS provides an upper bound of γ

For consistent I use 2SLS where the first stage is:

$$DI_i = \lambda X_i + \delta Z_i + \eta_i$$

- Z_i includes $I_i(65 > FRA_i < 66)$ and $I_i(FRA_i \geq 66)$ with $I_i(FRA_i = 65)$ is the omitted category
- Z_i also includes indicator for relatively more generous state in terms of level of stringency in awarding SSDI benefits

IV: Variations in the FRA

The Social Security Amendments of 1983 and Calculation of the OASI and SSDI benefits

The actuarial reduction factor associated with OASI makes SSDI relatively more generous for workers with higher FRA

Duggan et al. (2007), Li and Maestas (2008), and Coe et al. (2010) provide evidence of the existance of the first stage

Assumption: Differences in employment of the different cohorts associated with different FRAs are only due to their heterogeneous incentives to apply for SSDI for ages 52-60

Figure 1 Figure2 IVAllowRate

First Stage of the 2SLS

Table 3 - First Stage Regressions Using different Specifications

	(i)	(iii)
Indicator 65>FRA<66	0.04	0.03
	(0.05)	(0.05)
Indicator FRA>=66	0.19***	0.17***
	(0.05)	(0.05)
More generous state		-0.02
		(0.03)
Age fixed effects	Y	Y
State level controls	N	Y
State fixed effects	N	Y
Obs.	1231	
R^2	0.25	0.28
F-statistic of the weak identification test	17.34	9.84
Critical value for max 10% bias of the weak identification test	19.93	9.08

Note: Robust standard errors are in parentheses account for clustering at the individual level. The regressions include demographic, health, and economic controls into the three specifications as described in the paper.
***Significant at the 1 percent, **Significant at the 5 percent, *Significant at the 10 percent.

Main Findings

Table 4 - Effect of SSDI Application Decision on Labor Force Participation

	(i)		(iii)	
	OLS	IV	OLS	IV
Denied SSDI applicant	-0.49***	-0.37**	-0.49***	-0.36*
	(0.03)	(0.19)	(0.03)	(0.20)
Age fixed effects	Y	Y	Y	Y
State level controls	N	N	Y	Y
State fixed effects	N	N	Y	Y
Obs.	1231			
R^2	0.37	0.37	0.41	0.39
F stat.	14.08	7.05	11.73	6.47
P-value of the overidentification test		0.78		0.57

Note: Robust standard errors are in parentheses account for clustering at the individual level. The regressions include demographic, health, and economic controls into the three specifications as described in the paper. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

avgemp

Sensitivity of the Main Findings

Table 5 - Sensitivity Analysis of the Main Findings of the Paper

	Drop great recession years		Drop widows		Drop singles		Drop non-whites	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Denied SSDI applicant	-0.51***	-0.36*	-0.49***	-0.39**	-0.47***	-0.35	-0.47***	-0.34
	(0.03)	(0.22)	(0.03)	(0.21)	(0.04)	(0.26)	(0.04)	(0.29)
	First Stage of the 2SLS							
Indicator 65>FRA<66		0.03		0.002		-0.02		0.002
		(0.05)		(0.05)		(0.06)		(0.05)
Indicator FRA>=66		0.16***		0.15***		0.12**		0.11**
		(0.05)		(0.05)		(0.07)		(0.06)
More generous state		-0.02		-0.02		-0.01		-0.03
		(0.03)		(0.03)		(0.04)		(0.04)
Obs.	1191		1177		835		912	
P-value from the overidentification test		0.61		0.82		0.89		0.47

Notes: Robust standard errors are in parentheses account for clustering at the individual level. All the regressions are estimated using the specification (iii) described in the paper with age fixed effects and state fixed effects.
***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Conclusions

SSDI application causes a reduction in employment of denied applicants by 36 percentage points in the short-run

Unobserved factors like severity of health conditions or low labor market opportunities of the denied applicants account for another 13 percentage points reduction in the employment

The findings call for shorter SSDI determination time and reduce the work discouragement while applying

Also indicates the importance of resources needed for smoothing the transition of denied applicants back to work

Thank You

Appendix

Literature Review

Bound (1989) is the seminal paper in estimating the benefit receipt effect

Chen and van der Klaauw (2008), Maestas et al. (2013), French and Song (2014) among others to provide the estimate of causal effect of benefit receipt

von Wachter et al. (2011) find 30 percentage points reduction in employment for denied applicants in the short-run using matching in observables

Autor et al. (2015) find the effect of waiting time is 6 percentage points reduction in employment of denied applicants in the long-run

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Average Employment in Sample

Figure – Fraction of SSDI Eligible Workers Working for Pay and US Unemployment Rate 1992-2012

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Characteristics of Sample

Table 1 – Sample Characteristics of Non-applicants, Denied, and Allowed SSDI Applicants and Comparison Between Groups

	Denied applicants T=1	Control group T=0	(T=1) - (T=0)	Never applied N=1	(T=1) - (N=1)
Demographics					
Age	54.76	55.26	**-0.51*** **	54.82	**-0.06**
	(2.28)	(2.21)	(0.15)	(2.34)	(0.13)
Fraction of female	0.57	0.5	**0.07***	0.56	**0.01**
	(0.50)	(0.50)	(0.03)	(0.50)	(0.03)
Fraction of non-white	0.33	0.23	**0.10****	0.17	**0.15*****
	(0.47)	(0.42)	(0.03)	(0.38)	(0.03)
Fraction of school dropouts	0.31	0.24	**0.07***	0.12	**0.19*****
	(0.46)	(0.43)	(0.03)	(0.33)	(0.03)
Fraction of high school educated	0.40	0.38	**-0.02**	0.35	**0.03**
	(0.49)	(0.49)	(0.03)	(0.48)	(0.03)
Fraction of college educated	0.31	0.36	**-0.05**	0.52	**-0.21*****
	(0.46)	(0.48)	(0.03)	(0.50)	(0.03)
Fraction married	0.6	0.71	**-0.10*****	0.76	**-0.16*****
	(0.49)	(0.46)	(0.03)	(0.43)	(0.03)
Fraction widowed	0.03	0.07	**0.04****	0.04	**0.03***
	(0.17)	(0.26)	(0.02)	(0.19)	(0.01)
Obs.	322	909	1231	21306	21628
Number of Individuals	322	347	669	8452	8774

Notes: Standard deviations are in parentheses. For the mean differences the standard errors are in parentheses.
***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Characteristics of Sample *cont...*

Table 1 – Sample Characteristics of Non-applicants, Denied, and Allowed SSDI Applicants and Comparison Between Groups (*continued ...*)

	Denied applicants T=1	Control group T=0	(T=1) - (T=0)	Never applied N=1	(T=1) - (N=1)
Taste for work					
Total years worked till reference age	27.9	32.53	**-4.63*****	31.5	**-3.60*****
	(10.73)	(9.14)	(0.67)	(8.54)	(0.60)
Fraction of at least one 5-year job tenure	0.87	0.92	**-0.06****	0.94	**-0.08*****
	(0.34)	(0.27)	(0.02)	(0.23)	(0.02)
Fraction with retiree health insurance	0.29	0.41	**-0.13*****	0.43	**-0.15*****
	(0.45)	(0.49)	(0.03)	(0.50)	(0.03)
Fraction in wealth quintile					
Lowest	0.35	0.22	**0.13*****	0.14	**0.21*****
	(0.48)	(0.41)	(0.03)	(0.34)	(0.03)
Second	0.27	0.24	**0.02**	0.19	**0.07****
	(0.44)	(0.43)	(0.03)	(0.40)	(0.02)
Third	0.19	0.23	**-0.04**	0.21	**-0.02**
	(0.39)	(0.42)	(0.03)	(0.41)	(0.02)
Fourth	0.11	0.17	**-0.05***	0.23	**-0.11*****
	(0.32)	(0.38)	(0.02)	(0.42)	(0.02)
Highest	0.08	0.14	**-0.06****	0.23	**-0.15*****
	(0.27)	(0.35)	(0.02)	(0.42)	(0.02)
Obs.	322	909	1231	21306	21628
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Characteristics of Sample *cont...*

Table 1 – Sample Characteristics of Non-applicants, Denied, and Allowed SSDI Applicants and Comparison Between Groups (*continued ...*)

	Denied applicants T=1	Control group T=0	(T=1) - (T=0)	Never applied N=1	(T=1) - (N=1)
Fraction with health conditions					
Self-reported poor/fair health	0.53	0.25	**0.28*****	0.11	**0.42*****
	(0.50)	(0.43)	(0.03)	(0.31)	(0.03)
Self-reported mobility problems	0.68	0.43	**0.25*****	0.28	**0.40*****
	(0.47)	(0.50)	(0.03)	(0.45)	(0.03)
Self-reported Large muscle problems	0.76	0.59	**0.17*****	0.42	**0.34*****
	(0.43)	(0.49)	(0.03)	(0.49)	(0.02)
Self-reported back problem	0.54	0.38	**0.16*****	0.29	**0.26*****
	(0.50)	(0.49)	(0.03)	(0.45)	(0.03)
Health limits work previous wave	0.13	0.1	**0.04**	0.05	**0.08*****
	(0.34)	(0.30)	(0.02)	(0.22)	(0.02)
Obs.	322	909	1231	21306	21628
Number of Individuals	322	347	669	8452	8774

Notes: Standard deviations are in parentheses. For the mean differences the standard errors are in parentheses.
***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Characteristics of Sample *cont...*

Table 1 – Sample Characteristics of Non-applicants, Denied, and Allowed SSDI Applicants and Comparison Between Groups (*continued...*)

	Denied applicants T=1	Control group T=0	(T=1) - (T=0)	Never applied N=1	(T=1) - (N=1)
Fraction with health conditions					
High blood pressure (BP)	0.48	0.36	**0.12*** **	0.31	**0.17*** **
	(0.50)	(0.48)	(0.03)	(0.46)	(0.03)
Cancer	0.08	0.06	**0.02**	0.05	**0.04***
	(0.28)	(0.24)	(0.02)	(0.21)	(0.02)
Lung disease	0.09	0.08	**0.01**	0.04	**0.05****
	(0.29)	(0.28)	(0.02)	(0.19)	(0.02)
Heart disease	0.16	0.14	**0.02**	0.08	**0.09*** **
	(0.37)	(0.35)	(0.02)	(0.26)	(0.02)
Stroke	0.09	0.02	**0.06*** **	0.01	**0.08*** **
	(0.28)	(0.15)	(0.02)	(0.10)	(0.02)
Psychiatric problems	0.24	0.15	**0.10*** **	0.1	**0.14*** **
	(0.43)	(0.35)	(0.03)	(0.31)	(0.02)
Arthritis	0.46	0.4	**0.06***	0.3	**0.16*** **
	(0.50)	(0.49)	(0.03)	(0.46)	(0.03)
Diabetes	0.2	0.15	**0.05***	0.08	**0.12*** **
	(0.40)	(0.36)	(0.03)	(0.27)	(0.02)
Obs.	322	909	1231	21306	21628
Number of Individuals	322	347	669	8452	8774

Notes: Standard deviations are in parentheses. For the mean differences the standard errors are in parentheses.
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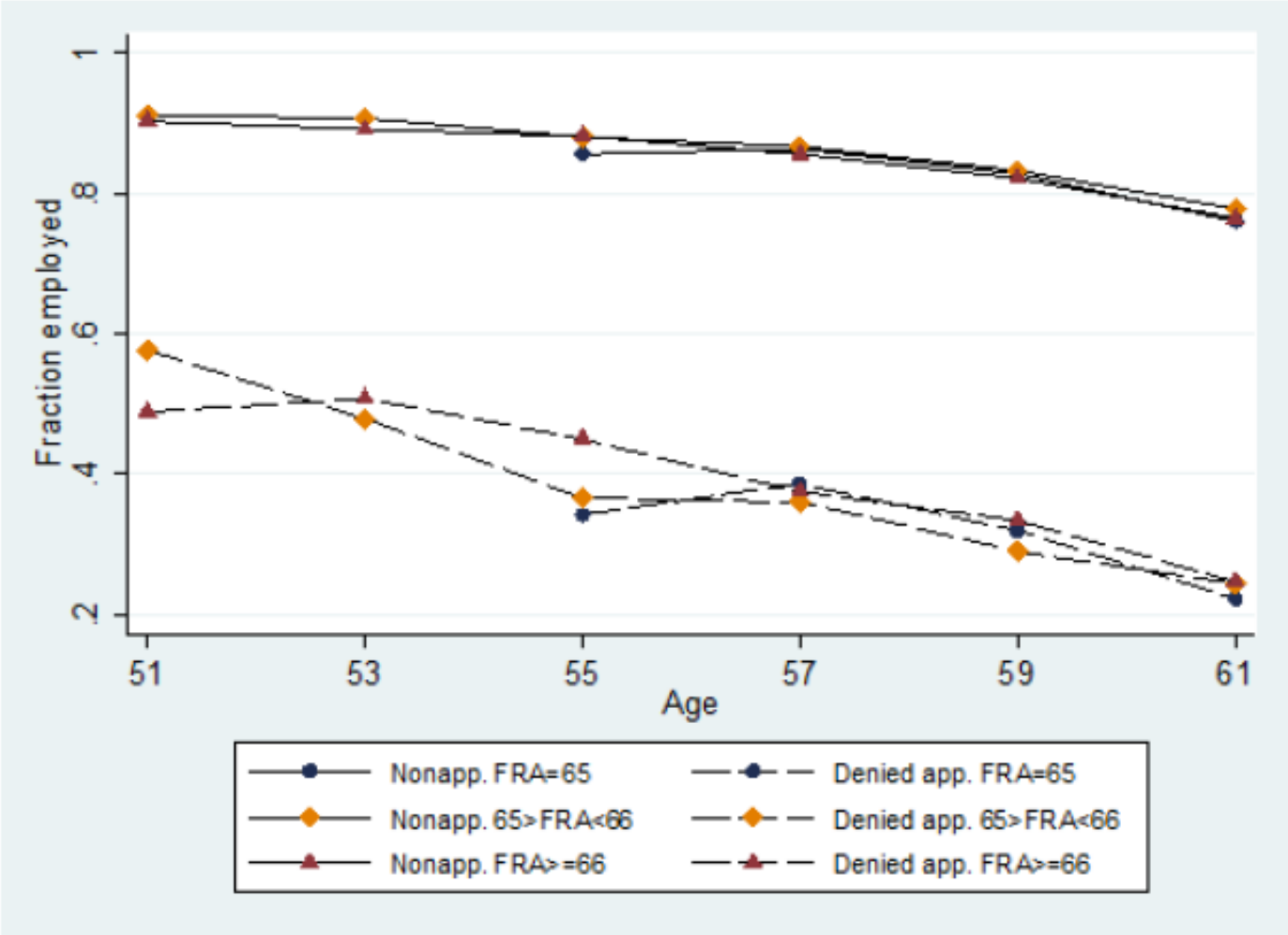
Exclusion Restriction of the FRA Change

Figure 1 - Labor Force Participation of Eligible Disability Insurance Denied Applicants and Non-applicants by FRA Cohort for Age 51-61



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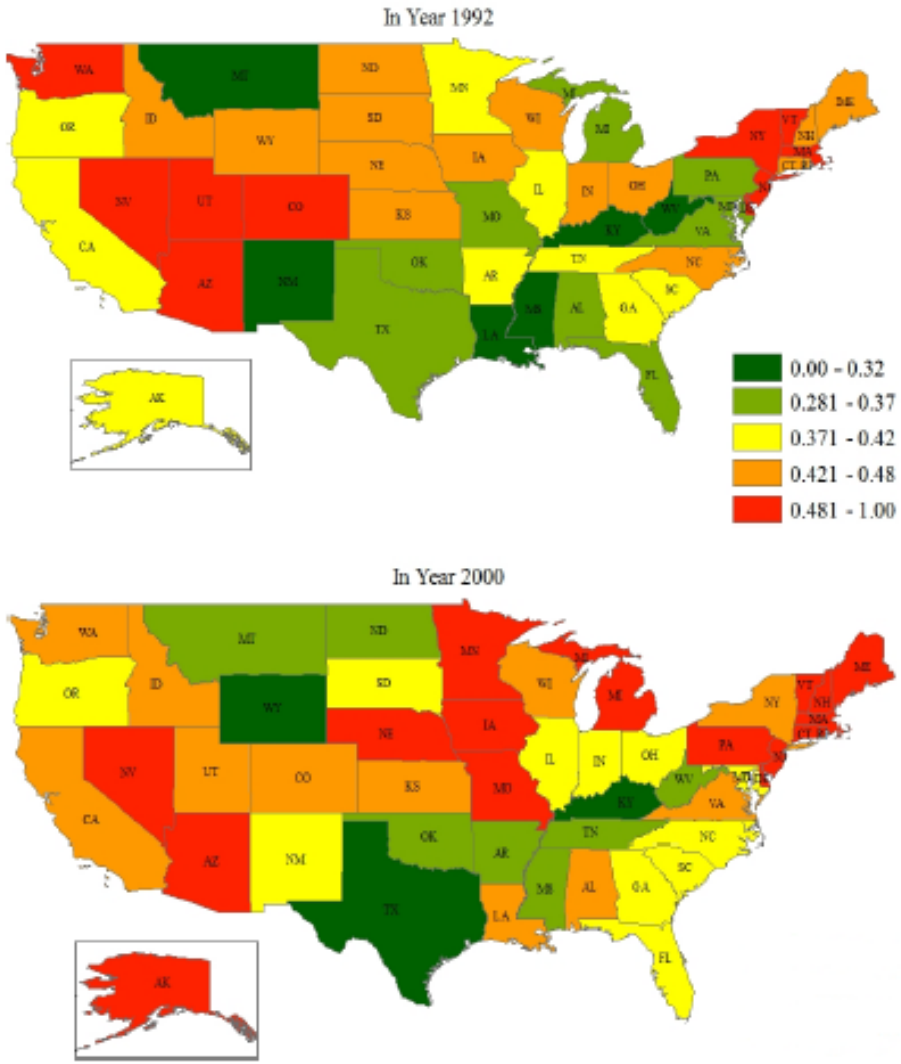
Variation in the SSDI Allowance Rate

Figure 2 - SSDI Allowance Rate for Men Age 50-54



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IV: Indicator for More Generous State

Steps in defining the more generous state indicator:

- Calculate allowance rate for age groups 45-49, 50-54, 55-59, and 60-64 for each state from 1992 to 2013
- For each age group in a given state I compare the allowance rate for a given year to the allowance rate of that age group in the same state in next year
- Define a state to be more generous in a given year only if the allowance rate of all four age groups in the following year is strictly higher simultaneously

Assumption: People do not choose their state of residence on the basis of allowance rate of the DDS office of that state

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Average Employment of Different Groups

Table 2 – Labor Force Participation of Non-applicants, Denied, and Allowed SSDI Applicants

	Denied applicants T=1	Control group T=0	(T=1) - (T=0)	Allowed applicants B=1	(B=1) - T(=1)
Labor supply					
Fraction of working in previous wave	0.70 (0.46)	0.88 (0.32)	-0.18*** (0.04)	0.71 (0.46)	0 (0.05)
Fraction of working in reference wave	0.31 (0.46)	0.87 (0.34)	-0.56*** (0.03)	0.34 (0.47)	0.03 (0.03)
Fraction of working in next wave	0.28 (0.45)	0.82 (0.38)	-0.54*** (0.03)	0.06 (0.23)	-0.22*** (0.03)
Obs.	322	909	1231	453	775
Number of individuals	322	347	669	453	775

Notes: Standard deviations are in parentheses. For the mean differences the standard errors are in parentheses.
***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

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