

The Effect of Cutting Disability Insurance Benefits on Labor Supply in Households

Evidence from a Swiss DI revision

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September 20, 2013



EALE 2013
Torino

In a nutshell

Research question

- How do married couples consisting of one disabled member react to a reduction in income?

Methodology

- Difference-in-Differences

Contribution

- Focus on *existing* beneficiaries - stock is very expensive, very limited outflow
- Effect on labor supply/earnings/other social insurances of *both* spouses

Results

- No effect on labor supply/earnings of both members of the household
- Some increased inflow into means-tested social insurance

Introduction

Motivation

- Debate about extent of asymmetric information in the disability insurance (DI) which leads to moral hazard and work disincentives
- If moral hazard present, more loose (strict) DI eligibility or higher (lower) benefit generosity should therefore lead to a decrease (increase) in labor supply.
- Identification of moral hazard difficult due to *the usual suspects* (endogeneity, selection, unobserved heterogeneity)

Introduction

Literature

- Most popular way today: Rely on exogenous variation created by policies or reforms applying to only a subset of the population to estimate the effect of a change in eligibility criteria on labor supply
(See Staubli (2011, *JPubE*) for Austria, Campolieti (2004, *JPubE*) and Gruber (2000, *JPE*) for Canada, Karlström *et al.* (2008, *JPubE*) for Sweden, and Chen and van der Klaauw (2008, *JE*) and Duggan *et al.* (2010, *JLawE*) for the US)

Introduction

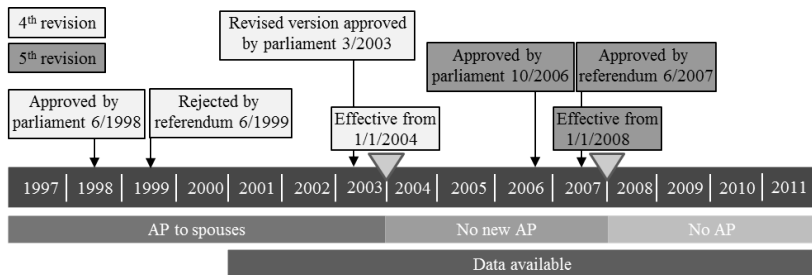
Contribution

- Focus on *existing* beneficiaries
 - Focus has been on inflow into DI or employment at time of application
 - Studies on outflow rare, on benefit cuts even more (Moore, 2011, *WP*)
- Effect on labor supply of *both* spouses
 - Reactions to income shocks within household mostly restricted to unemployment (Added Worker Effect)
 - Chen (2012, *WP*) and Duggan *et al.* (2010, *JLawE*) only exceptions, but look at increases in benefits

The additional pension (AP) to the spouse

- Eligibility criteria before policy change:
Person eligible to an ordinary DI pension will be granted an additional pension for his/her spouse if
 - Person with an ordinary DI pension was employed prior to the onset of work incapacity
 - Spouse is not his-/herself eligible for a DI benefit
- Amount: 30% on top of DI benefit = 5% of household income

Timeline of abolition



Data

- Administrative data set of all Swiss DI beneficiaries
- Yearly between 2001-2011
- Information from main beneficiary and spouse on
 - Benefits
 - Age at entry into DI
 - Labor market status
 - Earnings
 - Additional social insurance payments (complete 1st pillar except for UI)
 - Background characteristics (age, gender, number of children, canton of residence, marital status, nationality, type of disability)

Data

Sampling

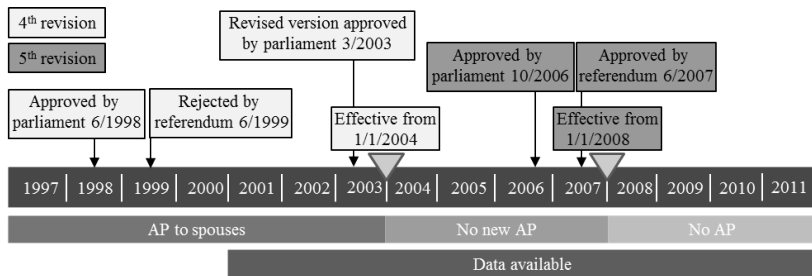
Sampling

- Married at time of entry
- Never living abroad
- Ordinary benefit
- Age at entry into DI less than 56

Identification

- Use the most similar unaffected group as a control group: married beneficiaries never receiving AP with similar time in DI
- Use the 4th revision to define treatment and control group
- The 5th revision provides before and after observations
- Years in DI instead of year of entry to define treatment and control group
- Example in the year 2008:
 - Treatment group: 5 years in DI (received AP until 2008 due to inflow before 2004)
 - Control group: 3 years in DI (*never* received AP due to inflow after 2003)
- Use cohorts instead of individuals

Timeline of abolition



Group substitution

- Caution with group substitution
- Example:

Year of observation	2005	2006	2007	2008	2009	2010
Five years in DI						
Receive AP	2000 ¹	2001	2002			
Ever received AP				2003		
Never receive AP					2004	2005
Three years in DI						
Receive AP	2002	2003				
Ever received AP						
Never receive AP			2004	2005	2006	2007

Notes: ¹ Year of entry into DI

Group substitution

- Could use other years for more pre- and post-reform observations:

Year of observation	2005	2006	2007	2008	2009	2010
Six years in DI						
Receive AP	1999 ¹	2000	2001			
Ever received AP				2002	2003	
Never receive AP						2004
Two years in DI						
Receive AP	2003					
Ever received AP						
Never receive AP		2004	2005	2006	2007	2008

Notes: ¹ Year of entry into DI

All possible treatment and control groups

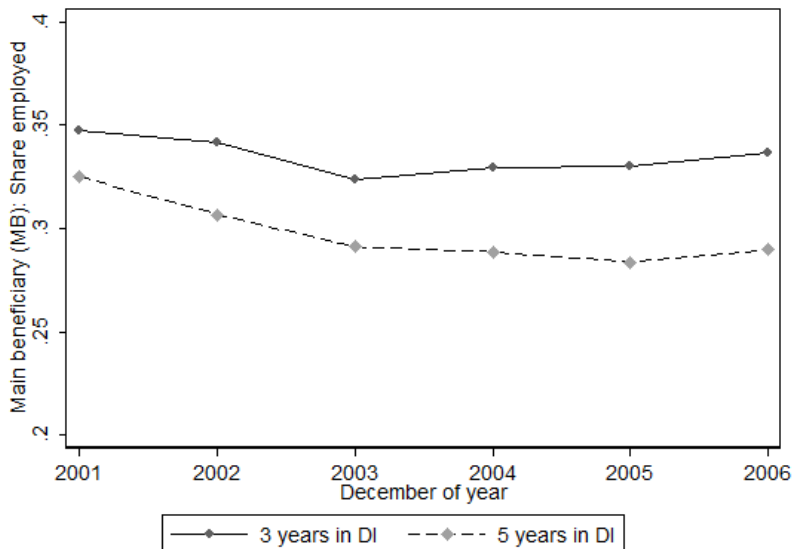
Years in DI	Year of obs.	Before				After			
		2004	2005	2006	2007	2008	2009	2010	2011
8	Start year	1996	1997	1998	1999	2000	2001	2002	2003
7		1997	1998	1999	2000	2001	2002	2003	
6		1998	1999	2000	2001	2002	2003		
5		1999	2000	2001	2002	2003			
4	of	2000	2001	2002			2005	2006	2007
3					2004	2005	2006	2007	2008
2	DI			2004	2005	2006	2007	2008	2009
1			2004	2005	2006	2007	2008	2009	2010

Group restrictions

- However, exclude some years
 - 1 and 2 year(s) in DI as control
 - ⇒ Inflow not complete after 2 years and significantly different in background characteristics
 - More than 8 years in DI as treated
 - ⇒ No additional post-reform observations, unobservables of treated and control likely not to be similar

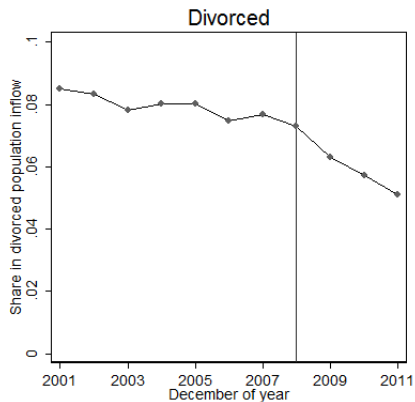
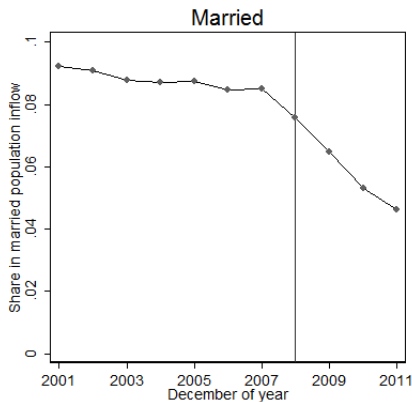
Parallel trend

Employment rate Main Beneficiary (MB)



Anticipation

- Anticipation as selection into treatment
- y-axis: Inflow = $\frac{\text{Married (Divorced) population with 5 years in DI}}{\text{Total married (divorced) population in DI}}$



Descriptives

Outcomes

	Treated (5-8 yrs in DI)		Control (3 yrs in DI)		
	Before 2007	After 2008	Before 2007	After 2008	Diff in Diff
Monthly amount of AP	292.3	0***	28.26	0***	-264.1 ^{†††}
Degree of disability	76.56	76.01***	74.16	73.73	-0.130
Employed	0.277	0.282	0.343	0.359	-0.010
Yearly earnings	6518	6709	8441	9403**	-771.8 [†]
Spouse: Employed	0.646	0.659***	0.754	0.758	0.010
Spouse: Yrly Earnings	35473	36442**	40684	40921	733.1
No longer married	0.067	0.067	0.029	0.026	0.003
Outflow	0.036	0.038	0.019	0.024*	0.003
N	30,024	29,248	5341	4290	68,903

Notes: Earnings are adjusted for inflation. ***, **: statistically different from *Before* at 1 and 5 percent, respectively. ^{†††}, [†]: statistically different at 1 and 10 percent, respectively.

Descriptives

Covariates

	Treated (5-8 yrs in DI)		Control (3 yrs in DI)		
	Before 2007	After 2008	Before 2007	After 2008	Diff in Diff
Age	51.78	51.90*	48.90	48.93	0.086
Female	0.441	0.442	0.427	0.419	0.010
Foreigner	0.432	0.434	0.428	0.426	0.004
Number of children	0.729	0.720	0.883	0.891	-0.016
Mental illness	0.333	0.346***	0.378	0.369	0.022 ^{††}
N	30,024	29,248	5341	4290	68,903

Notes: ***,*: statistically different from *Before* at 1 and 10 percent, respectively.
^{†††},^{††}: statistically different at 1 and 10 percent, respectively.

Regression results

Main Beneficiary: Employment

		Number of years post reform			
		1 (2008)	2 (2008-09)	3 (2008-10)	4 (2008-11)
Treated	5-8 years				
Control	3 years				
Treat $\times$ Post		-0.007			
		(0.010)			
N		68,903			
Treated	6-8 years				
Control	3 years				
Treat $\times$ Post		-0.006	-0.009		
		(0.010)	(0.009)		
N		54,475	79,491		

Notes: Every regression includes control variables for age of entry into DI, gender, foreigner dummy, number of children, dummies for cantons and mental illness. Robust standard errors in parentheses.

Regression results

Main Beneficiary: Employment

		Number of years post reform			
		1 (2008)	2 (2008-09)	3 (2008-10)	4 (2008-11)
Treated	7-8 years				
Control	3 years				
Treat × Post		-0.006 (0.011)	-0.009 (0.009)	-0.013 (0.009)	
N		39,349	57,628	74,494	
Treated	8 years				
Control	3 years				
Treat × Post		-0.007 (0.012)	-0.011 (0.010)	-0.015 (0.010)	-0.016* (0.009)
N		24,180	35,008	45,247	54,302

Notes: Every regression includes control variables for age of entry into DI, gender, foreigner dummy, number of children, dummies for cantons and mental illness. Robust standard errors in parentheses. *: statistically different at 10 percent.

Regression results

Spouse: Employment

		Number of years post reform			
		1 (2008)	2 (2008-09)	3 (2008-10)	4 (2008-11)
Treated	5-8 years				
Treat × Post	0.011 (0.009)				
Treated	6-8 years				
Treat × Post	0.011 (0.010)		0.006 (0.008)		
Treated	7-8 years				
Treat × Post	0.011 (0.010)		0.008 (0.009)	0.012 (0.008)	
Treated	8 years				
Treat × Post	0.007 (0.012)		0.007 (0.010)	0.010 (0.010)	0.019** (0.009)

Notes: Every regression includes control variables for age of entry into DI, gender, foreigner dummy, number of children, dummies for cantons and mental illness. Robust standard errors in parentheses. **: statistically different at 5 percent.

Placebo tests

- ✓ Use artificial date of policy change (e.g. January 1st, 2006)
- ✓ Run the same regressions (without effects on spouse) with divorced
- ✓ Compare two treatment groups (both loose AP, e.g. 7 years in DI vs. 5 years in DI)

Spillover effects

Testable

Spillover effects into other social insurances

- Testable as information is in the administrative data:
 - Supplementary Benefits (*Ergänzungsleistungen*) or Helplessness allowance (*Hilflosenentschädigung*) could increase.
($\approx 16\%$ (4%) of married DI beneficiaries draw SB (HA).)

Spillover effects

Supplementary Benefits

		Number of years post reform			
		1 (2008)	2 (2008-09)	3 (2008-10)	4 (2008-11)
Treated	5-8 years				
Treat × Post	0.006 (0.008)				
Treated	6-8 years				
Treat × Post	0.007 (0.008)		0.012* (0.007)		
Treated	7-8 years				
Treat × Post	0.009 (0.008)		0.015** (0.007)	0.014** (0.007)	
Treated	8 years				
Treat × Post	0.003 (0.009)		0.011 (0.008)	0.011 (0.008)	0.007 (0.007)

Notes: Robust standard errors in parentheses. **, *: statistically different at 5 and 10 percent, respectively.

Spillover effects

Debatable

- Debatable as information is not in the administrative data:
 - Occupational or accidental insurance benefits could increase if capped to prevent overcompensation.
 - Swiss Household Panel reveals about a third of DI beneficiaries also draw occupational insurance benefits (Benefits from accident insurance unknown).
 - Two insurance companies (approx. 350 AP beneficiaries) reported no single adjustment of benefits.
 - Inflow into unemployment insurance could also increase.
 - Need to have contributed to UI system to qualify for benefits.
 - Could be tested with old data.

Conclusion

- Abolition of additional pension to spouse led to no significant employment or earning effects for both members of the household.
- Some sign of spillover effect into means-tested social insurance.
- Possible explanations for asymmetric result:
 - Decreasing human capital
 - Value leisure more than working peers

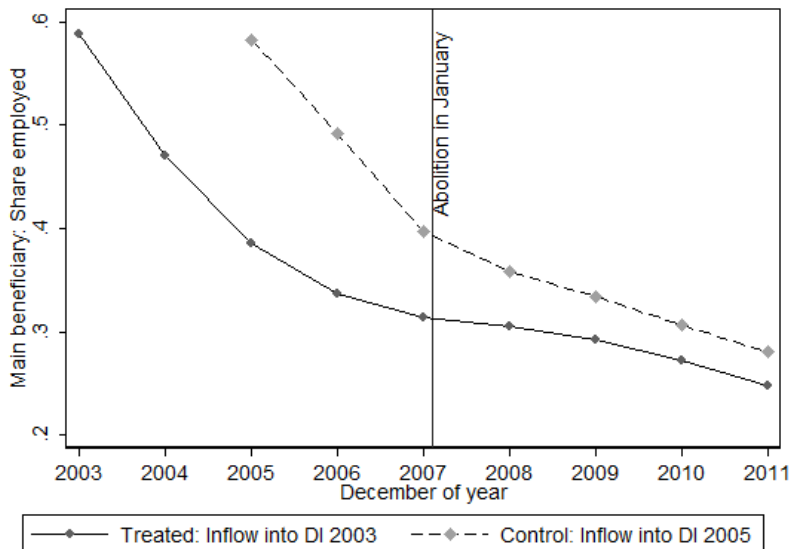
⇒ Policy makers should focus on services helping to remain in employment before entering DI.

Thank you!

Appendix

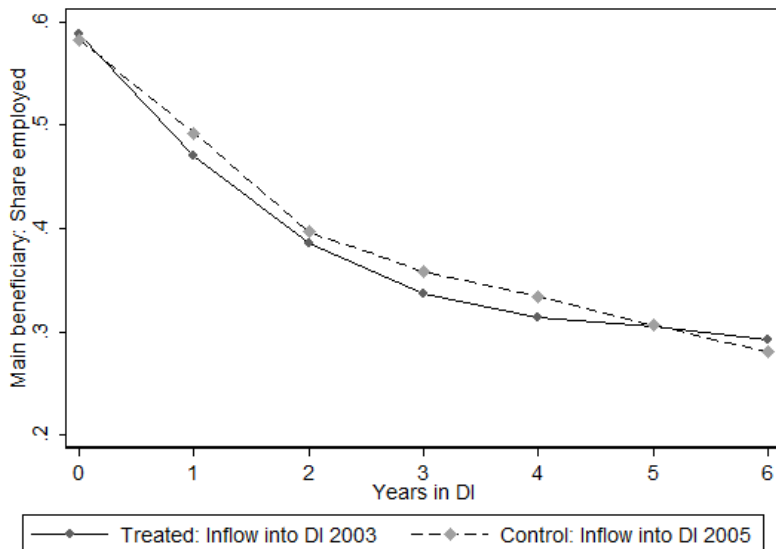
With standard DiD the reform looks successful

Treatment Effect: Increase in LFP by 9%-points



Why standard DiD fails

Years in DI on x-axis



Group substitution

- Caution with group substitution:
- Example:
 - Beneficiaries with 5 years in DI: Treated up to 2008, Control thereafter
 - Beneficiaries with 3 years in DI: Would be treated up to 2006, Control thereafter

Years in DI	Year of obs	Before				After			
		2004	2005	2006	2007	2008	2009	2010	2011
8	Start year	1996	1997	1998	1999	2000	2001	2002	2003
7		1997	1998	1999	2000	2001	2002	2003	2004
6		1998	1999	2000	2001	2002	2003	2004	2005
5		1999	2000	2001	2002	2003	2004	2005	2006
4		2000	2001	2002	2003	2004	2005	2006	2007
3	of DI	2001	2002	2003	2004	2005	2006	2007	2008
2		2002	2003	2004	2005	2006	2007	2008	2009
1		2003	2004	2005	2006	2007	2008	2009	2010

Treated and Control

Example: 8 years vs. 1 year

Years in DI	Year of obs	Before				After			
		2004	2005	2006	2007	2008	2009	2010	2011
8	Start year	1996	1997	1998	1999	2000	2001	2002	2003
7		1997	1998	1999	2000	2001	2002	2003	2004
6		1998	1999	2000	2001	2002	2003	2004	2005
5		1999	2000	2001	2002	2003	2004	2005	2006
4		2000	2001	2002	2003	2004	2005	2006	2007
3	of DI	2001	2002	2003	2004	2005	2006	2007	2008
2		2002	2003	2004	2005	2006	2007	2008	2009
1		2003	2004	2005	2006	2007	2008	2009	2010

Data

Inflow

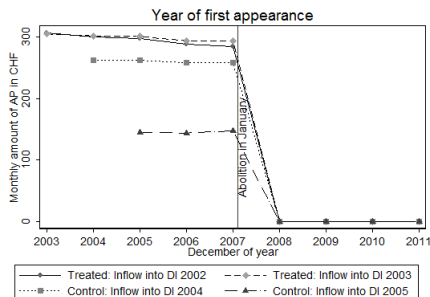
How to measure inflow (year of entry)?

- Year of first appearance
(But: many pensions are retrospective and people receiving them are different in background characteristics)
- Use age at year of entry recorded
(But: age at entry only estimated)

⇒ First stage shows age at entry is more precise

Inflow

Inflow measured with



Inflow

Inflow measured with

