Anticipated and Unanticipated Incentives of Disability Insurance Experience Rating: The Case of The Netherlands

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Introduction

- Netherlands stands out as a country with high disability insurance (DI) experience rating (ER) incentives.
  - In 2010, 40% of all DI benefit costs was experience rated for fixed contracts
  - Employer pays wage continuation during first and second year of sickness
  - ER incentives for time window of ten years of DI cohorts

- During the current crisis, criticism on system is rising
  - Firms in financial problems
  - Pressure towards non-experience rated temporary / flexible / independent jobs

Introduction

- Current study: focus on first years of the ER scheme in the NL – so how the transition took place
  - In 1998: start of the ER scheme!
  - Registered data of (inflow in) social benefit administration are used: 2000-2002
  - At that time: five year time window of all DI risks

- Research question: What was the impact of ER on the inflow in the DI scheme? Two distinct hypotheses:
  - Anticipated: employers were aware of ER system
  - Unanticipated: employers became aware if they were confronted with premium raises

Introduction: the Dutch context

- International evidence on effects of ER mixed
- For NL: strong evidence that various incentives caused moral hazard. DI was substitute pathway into unemployment. Counter-incentives may offset this.
- Causes of moral hazard:
  - DI is mandatory, pay-as-you go contribution rates
  - Insurance against all income losses that result from occupational and non-occupational injuries
  - System based on earnings capacity – so partial DI schemes

Large drop in inflow into DI..

The experience rating system

- Registration delay of two years; time window of five years (in principle)
- First, calculation of disability risk d_t, based on DI benefit costs $S_{t,s}$ at time t for cohort s, and total wages W_t.
- For each year, there a five cohorts of S, and (the average of) five respective wage sums:

$$d_t = \frac{\sum_{s=0}^{T} S_{t-2,\, t-2-s}}{\sum_{s=0}^{T} W_{t-2-s}/(T+1)} \qquad (1)$$

The experience rating system, ctd

- Next, calculation of premium rate:

$$p_t = \min (p_{min} + d_t , p_{max}) \qquad (2)$$

- Maximum premium mitigates large premiums
- Minimum premium needed to finance over-users
- Minimum and maximum premiums differ between wage sum of all employers
  - Criterion is equal to **15** x average wage sum in Netherlands
  - Maximum is lower for smaller employers (and minimum is higher)

	Full sample		
	2000	2001	2002
# Employers	309174	315314	312656
Number of employees	6524458	6972086	6922609
Average employer size	21.1	22.1	22.1
Sectors (%)			
Primary sector	6.2	5.9	5.9
Industrial sector	21.3	21.3	21.4
Trade sector	28.1	27.6	26.8
Service industries	3.3	3.4	3.5
Transport	3.3	3.3	3.3
Catering	8.2	8.3	8.3
Social services / cultural	12.7	12.5	12.5
(Semi-)public	1.6	1.6	1.5
Financial sector	13.9	14.7	15.3
Temp. empl. agencies	0.8	0.7	0.7
Unknown	0.7	0.8	0.8
Age and gender (%)			
15-25	23.6	23.3	23.2
26-35	32.3	31.5	30.3
36-45	22.0	22.5	23.1
46-55	16.6	16.7	17.1
56-65	5.6	6.0	6.5
Male	56.1	56.3	56.1
Female	43.9	43.7	43.9

Data: majority of firms paid the minimum premium

	Full sample		
	2000	2001	2002
Experience rating variables			
Average wage sum	34983	–	–
Disability risk (%)	1.18	1.37	1.35
DI premium (%)	1.39	1.51	1.56
$p_{min} - p_{max,}$ small empl.	1.24 – 4.17	0.98 – 4.77	1.24 – 6.06
$p_{min} - p_{max,}$ large empl.	0.67 – 5.56	0.41 – 6.36	0.45 – 8.08
% p_{min}	86.2	84.5	83.2
% p_{max}	5.1	4.9	4.5
% between p_{min} and p_{max}	8.7	10.7	12.2
Disabled workers as % of employer size			
Total	1.52	2.31	2.63
- Male	1.03	1.28	1.40
- Female	0.48	1.04	1.24
Inflow into DI (%)			
Total	0.99	1.01	0.94
- Male	0.49	0.51	0.48
- Female	0.50	0.50	0.46
- Fully disabled	0.30	0.36	0.34
- Partially disabled	0.69	0.65	0.60

Expected effects: anticipated

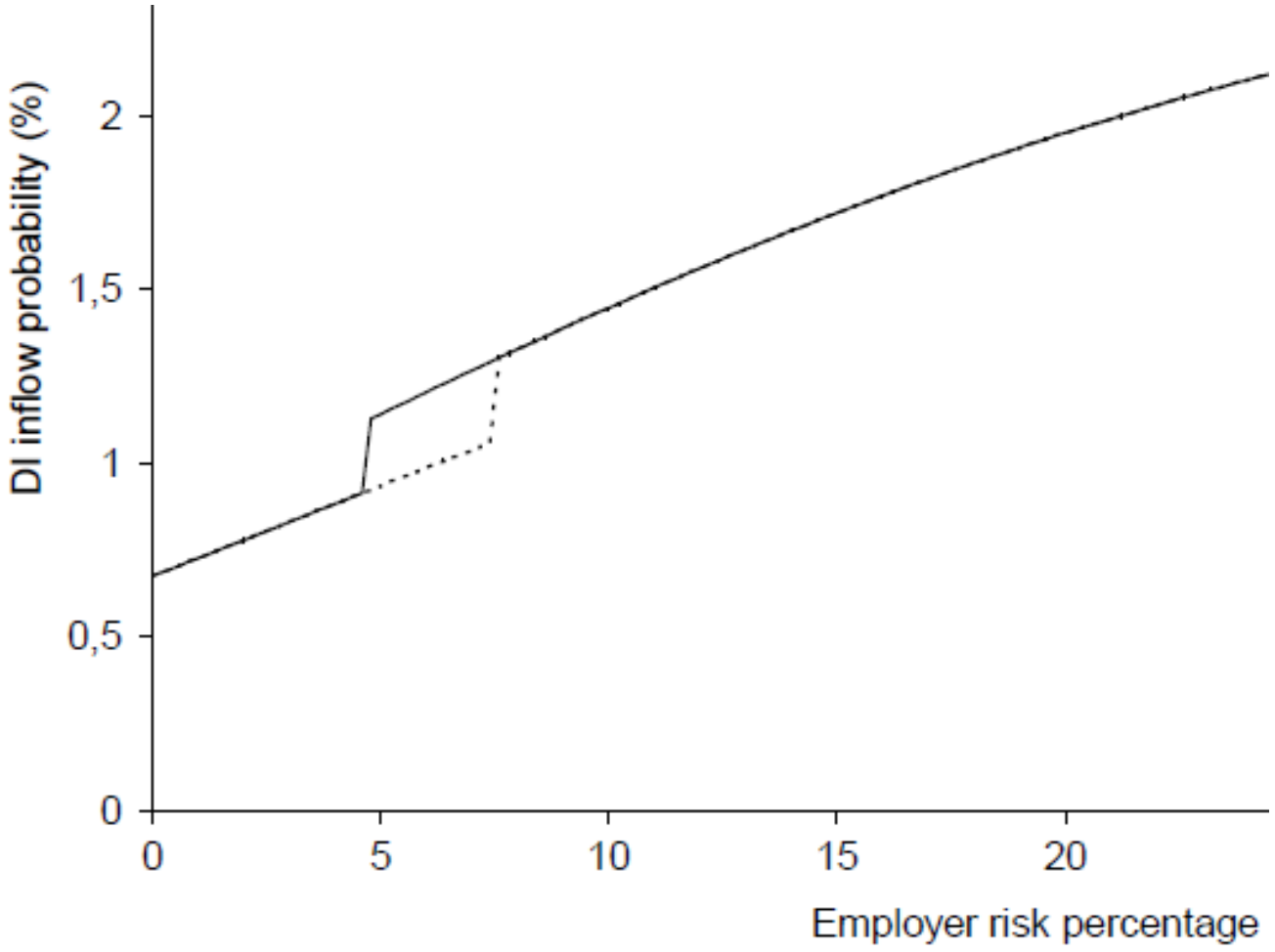
- **Anticipated**: employers aware of marginal incentive due to experience rating, so less incentives if $p = p_{max}$
- Direct comparison of employers with and without marginal incentive would however yield biased results (i.e. underestimation of effect)
- Therefore: Difference-in-difference design that exploits differences between small and larger firms
- Required: local linearity assumption – i.e. no substantial changes in DI risks
- Only estimate model for firms with > 10 workers

Estimation of anticipated effects

For some part of the distribution of disability risks, the marginal ER incentive is zero for small employers (paying their maximum premium) and one for medium/large employers (not paying maximum):

$$\underline{p}_{max} - \underline{p}_{min} < d_{jt} < p_{max} - p_{min}$$

Relevant range..



Model

Use cross sectional inflow data (2000-2002) to estimate a log odds model for DI inflow *f*

$$\ln \{fit / 1 - f_{it}\} = X_{it}\,\beta + \Phi\,(d_{it}) + \eta\; I\,(p_{max} - p_{min} < d_{it} < p_{max} - p_{min}) + \varepsilon_{it}$$

i = firm, *t* = time, *X* = controls, Φ is spline of disability risk *d*, *I* denotes event in parentheses, ε is residual

Estimation results

- Significant and (expected) negative effect only in 2002: –0.20 (0.031)
- Effects 0.096 and –0.081 in 2000 resp. 2001
- Interpretation: Awareness of ER has increased over time? Unanticipated effects?
- Other results: see PPHS paper.

Unanticipated effects: research design

- Idea: employers improve preventative activities if they are confronted with (unanticipated) premium increases
- Allows for a difference in difference design:
  - Compare *changes* in the DI inflow rate of firms experiencing it first premium raise..
  - ..to *changes* of those who haven't (yet)
- Due to two year registration lag, no risk of regression to the mean effects (Koning 2009)

Unanticipated Effects: outcomes

- Similar log odds model, but now with controls for ex ante differentials in treatment and control groups (as dummies)
- Treatment group: firms that have an increase in DI premium rate in 2001; controls have not.
- Dif-in-dif estimate for effect in 2002
- Effect estimate of 0.16 (0.021)
  - Similar for partial and full disability
- See Koning (2009) for details

Conclusions

- Effect of DI experience rating seems to have worked like a “wake-up call”
  - No evidence of ER incentive effects in 2000 and 2001
  - Strong evidence of effects from a learning perspective.
  - Relevant cognitive biases: availability bias, optimism bias and accumulation bias
- Care should be taken of ER design, particularly registration delays
- In Dutch context, also other (new) risks:
  - More inflow in unemployment insurance
  - Employers more eager to use temporary contracts, without ER (adverse selection)