Employer Responsibility in Disability Insurance: Evidence from the Netherlands

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Disability Insurance Takeup and Spending Increasing

Source: Annual Statistical Report on the Social Security Disability Insurance Program
Should We Put More Responsibility on Employers in DI?

In the U.S. Social Security Disability Insurance program in 40 years

- 2-fold increase in caseload
- 3-fold increase in share of working age people on DI
- 10-fold increase in spending

Improving the financial sustainability of DI programs is a priority for policy makers

One possible policy: Put more responsibility on employers—employer cost sharing/experience rating

- Employers who have more workers enter DI would pay more payroll tax

But little evidence on such policies
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  - Employers who have more workers enter DI would pay more payroll tax
- But little evidence on such policies
Research Question

What are the impacts of employer cost sharing / experience rating policies in disability insurance?
This Paper

- Develop a framework to think about optimal employer responsibility
- Leverage introduction of employer cost sharing / experience rating for temp workers in the Netherlands
- Firms that have more workers enter DI pay more payroll tax
- Exploit administrative data: employer-employee + DI + health
- Examine impact on DI receipt
- Short-term DI (sickness payment) receipt
- Employment selection of workers

Simple welfare calculation + optimal rate
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Theory: Optimal firm responsibility takes into account firm-side moral hazard

Employer responsibility decreased DI receipt

24% reduction in DI receipt among temporary agency workers

36% reduction in sickness claims among temporary agency workers

2.5% increase in probability of remaining employed

Employer responsibility impacted who firms hired

They hired healthier workers: fall in predicted receipt

14% of fall in DI receipt attributable to worker selection on health

Welfare calculation suggests that policy improved welfare

Cost sharing was set at approximately 47%

Optimal rate could be close to 100%
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2. Quasi-experimental evidence on employer-side moral hazard and the impact of employer-side policies in disability insurance
   - Descriptive work finds cross-firm and cross-industry variation in disability insurance claiming: Stapleton, Mann, Singh and Song (2017), Maestas, Prinz and Ravesteijn (2018), Lurie, Maestas, Miller and Prinz (2019)
   - Recent structural work: Kim and Rhee (2018), Aizawa, Kim and Rhee (2020)
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3. Evidence on employer labor demand response to employer-side policies in social insurance
   ▶ Unemployment insurance literature finds experience rating can reduce layoffs but also hiring: Anderson and Meyer (1993, 2000), Johnston (2020)
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3. Evidence on employer labor demand response to employer-side policies in social insurance
4. Evidence on social insurance for contingent workers
   - Recent descriptive work finds contingent work on the rise: Katz and Krueger (2019a,b), Collins et al. (2019)
   - Recent descriptive work finds that DI claiming is lower among contingent workers but disability risk is higher following an injury: Broten, Dworsky and Powell (2018), Rutledge, Zulkarnain and King (2018)
Contributions

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2. Quasi-experimental evidence on employer-side moral hazard and the impact of employer-side policies in disability insurance
3. Evidence on employer labor demand response to employer-side policies in social insurance
4. Evidence on social insurance for contingent workers
Theoretical Framework
Motivation

Several proposals to incentivize employers to employ more workers who could potentially claim DI

- E.g., experience rating DI contributions

Underlying idea: firm-side moral hazard

- Firms can exert effort to influence workers' DI claims
- Absent incentives, underprovision of effort
- Drives up DI costs
- Imposes externality on all firms and workers: higher premium

Firm-side incentives can make firms internalize these costs

Key concerns:

- Impose excess risk on firms?
- Firms select workers less likely to claim DI?

Goal of the model: Under what assumptions these mechanisms work?
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- Continuum of mass 1 of risk-averse workers
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- Continuum of mass 1 of risk-averse workers
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- Wage $w$ (fixed for now)

Benefit is $\rho w$ ($\rho$ is the replacement rate)

Assume reflects worker incentives (Baily, 1978; Chetty, 2006; Diamond and Sheshinski, 1995)

Worker utility is $U(c)$ over consumption

Value of non-employment without benefits $U(b)$

Benefit is financed from a payroll tax $(1 - \eta) \rho w$ and firm cost sharing $\eta \rho w$
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Workers are characterized by their type $\theta$ and have health-related productivity distributions $F_\theta(\lambda)$ (density $f(\lambda)$) on $[0, 1]$.

Types distributed as $G(\theta)$ (density $g(\theta)$) on $[0, 1]$.

$\theta$ represents a ranking of types.

Workers realize a health-related productivity $\lambda$ from the distribution $F_\theta(\lambda)$.

Firms are risk neutral (ranking based on expected productivity) and have fixed cost (opportunity cost, outside option) $M$.

Must pay same wage $w$ for all types at time of hiring.

Can't condition wage on health-related productivity type.

Relax later and allow type-specific wages.

Wage is not dependent on realized productivity $\lambda$.

No ex post wage bargaining.

Optimal contract with risk-averse workers and risk-neutral firms.
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  - Optimal contract with risk-averse workers and risk-neutral firms
Setup: Timeline

1. Firm matched with a worker of type $\theta$ (firm can observe $\theta$)
2. Firm decides whether to hire worker at wage $w$
3. Worker's productivity $\lambda$ is realized
4. Firm decides whether to retain worker at wage $w$
5. If not retained, worker enters DI
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Employment Level

Worker should be retained if productivity larger than value of non-employment:

\[ \lambda > b \] (1)

Firms retain worker if

\[ \lambda - (1 + \tau)w \geq \eta \rho w \] (Retained: Productivity Net of Cost)

or

\[ \lambda > (1 + \tau)w - \eta \rho w = (1 + \tau - \eta \rho)w \] (3)

Threshold \( \bar{\lambda} \):

\[ \bar{\lambda}(\eta) = (1 + \tau - \eta \rho)w \] (4)
Employment Level

- Worker should be retained if productivity larger than value of non-employment:

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(1)

Some firms retain workers if

\[ \lambda - (1 + \tau)w > \eta \rho w \]

Retained: Productivity Net of Cost

Not Retained: Employer Share of Benefit Costs

or

\[ \lambda > (1 + \tau)w - \eta \rho w = (1 + \tau - \eta \rho)w \]  

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Threshold \( \bar{\lambda} \):

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Employment Level

- Worker should be retained if productivity larger than value of non-employment:
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- Firms retain worker if
  \[
  \lambda - (1 + \tau)w > -\eta \rho w
  \]
  Retained: Productivity Net of Cost  \hspace{1cm} Not Retained: Employer Share of Benefit Costs

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  \[ \bar{\lambda}(\eta) = (1 + \tau - \eta \rho)w \]
Optimal Policy With No Selection

- Assume no worker heterogeneity ($F_\theta(\lambda) = F(\lambda)$ for all $\theta$)

![Diagram showing the distribution of $f(\lambda)$ with a shaded area between $b$ and $\bar{\lambda}$]
The cost of moral hazard is the lost productivity:
\[
\bar{\lambda} b \lambda dF(\lambda)
\]
(5)
and the corresponding welfare loss (lower wages)

With risk neutral employers, it's optimal to set
\[
\eta^* = 1
\]
which minimizes \( \bar{\lambda} \) and welfare loss

Corresponding wage \( w \) must satisfy the economy's budget constraint:
\[
F(\bar{\lambda}) \rho = \int_{1}^{\bar{\lambda}} \lambda dF(\lambda) - M
\]
(6)
or
\[
w = \int_{1}^{\bar{\lambda}} \lambda dF(\lambda) - M + (1 - F(\bar{\lambda})).
\]
(7)
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- Corresponding wage \( w \) must satisfy the economy’s budget constraint:
  \[
  \underbrace{F(\bar{\lambda}) + (1 - F(\bar{\lambda}))}_{\text{Disabled}} \cdot w = \int_\lambda^1 \lambda dF(\lambda) - M \\
  \underbrace{(1 - F(\bar{\lambda}))}_{\text{Working}}
  \]
  (6)

  or
  \[
  w = \frac{\int_\lambda^1 \lambda dF(\lambda) - M}{\rho F(\bar{\lambda}) + (1 - F(\bar{\lambda}))}.
  \]  
  (7)
Firms Can Choose Among Heterogeneous Workers

\[
\bar{\lambda} \text{ is the same for all } \theta: \text{ retention depends on realized productivity not on ex ante type}
\]
Firms Can Choose Among Heterogeneous Workers

A type $\theta$ worker is hired by a risk neutral firm if

$$\int \bar{\lambda} dF_\theta(\lambda) \geq M.$$ (8)

This implies a threshold $\bar{\theta}(\eta)$ below which workers will not be hired.

The total lost productivity is

$$L(\eta) = \int_{\bar{\theta}(\eta)}^{0} \int_{b}^{1} \lambda f_\theta(\lambda) g(\theta) d\lambda d\theta + \int_{0}^{\bar{\theta}(\eta)} \int_{b}^{1} \lambda f_\theta(\lambda) g(\theta) d\lambda d\theta.$$ (9)

Optimal cost sharing $\eta$ now needs to balance

Loss from increasing $\bar{\theta}$ (selection)

Gain from decreasing $\bar{\lambda}$ (retention)
Firms Can Choose Among Heterogeneous Workers

- A type $\theta$ worker is hired by a risk neutral firm if

$$\int_{\bar{\lambda}}^{1} \lambda dF_{\theta}(\lambda) - \left[ F_{\theta}(\bar{\lambda}) \eta \rho w + (1 - F_{\theta}(\bar{\lambda})) w \right] > M. \quad (8)$$
Firms Can Choose Among Heterogeneous Workers

- A type $\theta$ worker is hired by a risk neutral firm if

$$\int \lambda dF_\theta(\lambda) - \left[ F_\theta(\bar{\lambda}) \eta \rho w + (1 - F_\theta(\bar{\lambda})) w \right] > M.$$ \hspace{1cm} (8)

- This implies a threshold $\tilde{\theta}(\eta)$ below which workers will not be hired
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\( L_{S} \) Not Hired

\( L_{R} \) Inefficiently Not Retained
Firms Can Choose Among Heterogeneous Workers

- A type $\theta$ worker is hired by a risk neutral firm if

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- Optimal cost sharing $\eta$ now needs to balance
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Firms Can Choose Among Heterogeneous Workers

\[ f(\lambda) \]

\[ L_R: \text{loss from inefficiently not retained} \]

\[ L_S: \text{loss from selection} \]
Firms Can Choose Among Heterogeneous Workers

- Tradeoff captured in first order condition:

\[
\frac{d}{d\eta} L(\eta^*) =
\]

\[
\frac{d}{d\eta} \bar{\theta}(\eta^*) \cdot g(\bar{\theta}(\eta^*)) \cdot \left( E_{\bar{\theta}(\eta^*)} [\lambda | b \leq \lambda] - E_{\bar{\theta}(\eta^*)} [\lambda | b \leq \lambda \leq \bar{\lambda}(\eta^*)] \right)
\]

\[
\text{Change in } \bar{\theta} \quad \text{Density Affected} \quad \text{Change in Expected Lost Productivity at } \bar{\theta}
\]

\[
+ \frac{d}{d\eta} \bar{\lambda}(\eta^*) \cdot \int_{\bar{\theta}(\eta^*)}^{1} f_{\theta}(\bar{\lambda}(\eta^*)) g(\theta) d\theta \cdot \bar{\lambda}(\eta^*)
\]

\[
\text{Change in } \bar{\lambda} \quad \text{Density Affected} \quad \text{Productivity}
\]

\[
\text{Benefit of Retention}
\]

\[
= 0.
\]
Extensions: Ex Post Wage Bargaining, Risk-Averse Firms, Type-Specific Wages

\[ w(\lambda) = w + \gamma(\lambda - \bar{\lambda}) \]  

\( \bar{\lambda} \) can be more efficient

Risk-averse firms

Details

Type ranking \( \theta \) will also depend on higher moments

\( \bar{\theta} \) set differently

Type-specific wages

Details

Wage combination of average and type-specific productivity:

\[ \hat{w}(\theta) = \alpha w(\theta) + (1 - \alpha) w \]

With no type-specific wages (\( \alpha = 0 \)), only extensive margin selection

With fully type specific wages (\( \alpha = 1 \)), incidence is completely on wages, no selection, but distributional consequences

In between (0 < \( \alpha \) < 1), some selection, some distributional consequences, \( \bar{\Theta} \) higher
Extensions: Ex Post Wage Bargaining, Risk-Averse Firms, Type-Specific Wages

- **Ex Post Wage Bargaining**
  - Worker with realized productivity $\lambda$ captures a portion $\gamma$ of the surplus she brings to the employer
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Empirical Context and Data
Temp Workers in Netherlands

- **Permanent workers (66%)**
  - Can only be fired after payment of a substantial severance package
  - DI experience rated since 1998

- **Temp workers (7.5%)**
  - Contract does not guarantee work and earnings
  - Employer can notify worker one day in advance that their work is no longer needed
  - Most work in temp agencies
  - Logistics, industrial production most common

**Job Types**

- Much weaker labor market attachment, lower hours and wages, much less educated, lower-SES
- Higher initial DI receipt
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  - Higher initial DI receipt
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Summary Statistics

- DI experience rated since 2012/2013
  - 22 / 46
Combine several administrative datasets 2009-2016:

- Matched employer-employee data: contract durations, contract types, earnings
- Employer characteristics: sector, industry
  - Limitation: temporary work agencies are observed employer, count as one industry
- Disability insurance and sickness uptake: timing, type of disability, benefits amounts
- Healthcare spending
- Other information on individuals: ethnicity, education, etc.
Premium Calculation

\[ \text{Premium}_j = \text{Balance Correction} + \text{Correction Factor} \times (\text{Risk}_j - \text{Average Risk}). \]

Risk is calculated as the ratio of benefit costs of the former workers of the employer and wages:

\[ \text{Risk}_j = \frac{\text{Benefit Costs}_j}{\text{Wage Bill}_j}. \]

- Maximum: 3.28% (DI) and 7.77% (Sickness)
- Calculated over benefits that started over last up to 10 years
- First premiums in 2014 calculated over benefits starting 2012-2013
Empirical Cost Sharing Factor $\eta$

- Premiums are not fully experience rated ($\eta < 1$): firms don’t pay all DI costs
  - Minimum/maximum rate
  - 10-year lookback period
- Average temp agency worker claims DI at 43.9 and retirement age is 65
- $\eta = \frac{10}{21.1} = 0.47$
Estimation and Results
Disability Insurance Benefit Receipt—Estimation

\[ y_{ijt} = \beta_0 + \sum_{t=2009}^{2016} \beta_{1t} T_{it} + X_{it}\beta + \rho_{rt} + \gamma_j + \varepsilon_{ijt} \] (12)

where

- \( i \) indexes individuals, \( j \) indexes firms, and \( t \) indexes time
- \( T_{it} \in \{0, 1\} \) is an indicator for whether worker \( i \) is a temp worker
- \( X_{it} \) is vector of controls (education, age, healthcare spending percentile)
- \( \tau_t \) are year fixed effects
- \( \gamma_j \) are firm fixed effects
- Coefficient of interest: \( \beta_{1t} \), year-specific temp vs permanent difference
Disability Insurance Benefit Receipt—Results

Pooled estimate: -24%

Alternative Specifications  Heterogeneity 1  Heterogeneity 2  Comparison with Prior Studies
For temp agency workers, can also observe sickness/short-term DI take up

Became experience rated at the same time

Permanent workers not available as control group

\[ y_{ijt} = \beta_0 + \sum_{t=2009}^{2016} \beta_{1t} + X_{it}\beta + \rho_r + \gamma_j + \varepsilon_{ijt} \]  

where

- \( i \) indexes individuals, \( j \) indexes firms, and \( t \) indexes time
- \( X_{it} \) is vector of controls (education, age, healthcare spending percentile)
- \( \tau_t \) are year fixed effects
- \( \gamma_j \) are firm fixed effects
- Coefficient of interest: \( \beta_{1t} \), year-specific estimate
Short-Term Disability Insurance Benefit Receipt—Results

Pooled estimate: -20%

Alternative Specifications

Heterogeneity 1

Heterogeneity 2
Short-Term Disability Insurance Benefit Receipt–Results

Pooled estimate: -36%

- Alternative Specifications
- Heterogeneity 1
- Heterogeneity 2
Pooled estimate: -26%

Alternative Specifications  Heterogeneity 1  Heterogeneity 2
Employment—Results

Pooled estimate: 2.5%

Alternative Specifications

Heterogeneity 1

Heterogeneity 2
What Do Temp Work Agencies Do?

- Hard to observe in data
- Based on information from public documents and discussions with agencies:
  - Trying to quickly re-integrate workers
- For example, at Randstad (the largest agency):
  - Regularly audit whether workers are actually sick
  - Health and absenteeism department assesses workers' working capacity and recommends actions for recovery
  - If illness persists, check in again and discuss what tasks the worker would still be capable of performing and develop a re-integration plan together with the worker
  - Plan describes how the worker can get back to work and how the firm can help (e.g., by offering training or hiring a separate outside firm specialized in re-integration)
  - Regular follow up with worker on plan
  - If they can't perform original tasks, evaluate what work would be appropriate given the changes in his/her working capacity.
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Estimation: Worker Selection

Previous Year’s Healthcare Spending Predictive of DI Takeup

![Graph showing the relationship between log total healthcare spending and disability insurance receipt (percent), with points labeled for permanent workers and temporary agency workers.]

- Log Total Healthcare Spending
- Disability Insurance Receipt (Percent)

Permanent Workers
Temporary Agency Workers
Worker Selection—Estimation

Estimate predicted DI takeup

\[ d_{ijt} = \alpha + \sum_{p=1}^{100} \gamma_p \delta_p + \varepsilon_{ijt} \] (14)

where

- \( i \) indexes individuals, \( j \) indexes firms, and \( t \) indexes time
- \( T_{it} \in \{0, 1\} \) is an indicator for whether worker \( i \) is a temp worker
- \( \delta_p \) are indicators for spending in the \( p \)th percentile of the healthcare spending distribution in the previous year
Worker Selection—Composition

Percent of Workers

Predicted Disability Insurance Receipt

2011  2012
Worker Selection—Results

Pooled estimate: selection is 14% of overall effect

Alternative Specifications
Welfare Estimation
Optimality Condition

\[
\frac{d}{d\eta} L(\eta^*) = \frac{d}{d\eta} \tilde{\theta}(\eta^*) \cdot g(\tilde{\theta}(\eta^*)) \cdot \left( E_{\tilde{\theta}(\eta^*)} \left[ \lambda \mid b \leq \lambda \right] - E_{\tilde{\theta}(\eta^*)} \left[ \lambda \mid b \leq \lambda \leq \bar{\lambda}(\eta^*) \right] \right) \\
\quad + \frac{d}{d\eta} \bar{\lambda}(\eta^*) \cdot \int_{\tilde{\theta}(\eta^*)}^{1} f_{\theta}(\bar{\lambda}(\eta^*)) g(\theta) d\theta \cdot \bar{\lambda}(\eta^*) \\
\quad = 0.
\]
Optimality Condition

\[
\frac{d}{d\eta} \bar{\theta}(\eta^*) \cdot g(\bar{\theta}(\eta^*)) = \left( E_{\bar{\theta}(\eta^*)} [\lambda \mid b \leq \lambda] - E_{\bar{\theta}(\eta^*)} [\lambda \mid b \leq \lambda \leq \bar{\lambda}(\eta^*)] \right) \cdot \left( \int_{\bar{\theta}(\eta^*)}^{1} f_\theta(\bar{\lambda}(\eta^*)) g(\theta) d\theta \cdot \frac{d}{d\eta} \bar{\lambda}(\eta^*) \right)
\]

Cost of Selection

Change in \bar{\theta} \hspace{1cm} \text{Density Affected} \hspace{1cm} \text{Expected Lost Productivity at \bar{\theta}}

Change in \bar{\lambda} \hspace{1cm} \text{Density Affected} \hspace{1cm} \text{Productivity}
Connecting Empirical Estimates

\[
\frac{d}{d\eta} \bar{\theta}(\eta^*) \cdot g(\bar{\theta}(\eta^*)) \cdot \frac{d}{d\eta} \bar{\lambda}(\eta^*) \cdot \int_{\bar{\lambda}(\eta^*)}^{1} f_\theta(\bar{\lambda}(\eta^*)) g(\theta) d\theta \\
\text{Change in } \bar{\theta} \quad \text{Density Affected} \\
\text{Change in } \bar{\lambda} \quad \text{Density Affected}
\]

\[
= \frac{E_{\bar{\theta}(\eta^*)}[\lambda \mid b \leq \lambda] - E_{\bar{\theta}(\eta^*)}[\lambda \mid b \leq \lambda \leq \bar{\lambda}(\eta^*)]}{\mathcal{E}_{\bar{\theta}(\eta^*)}[\lambda \mid b \leq \lambda]} = \frac{0.03}{0.17} \cdot \frac{13}{13} = 0.176
\]

Proxying productivity with wages of workers who are less likely to be hired vs more likely to be retained (based on predicted disability receipt)
Connecting Empirical Estimates

Proxying productivity with wages of workers who are less likely to be hired vs more likely to be retained (based on wage)
If we assume that the response parameters are linear in experience rating factor $\eta = 0.47$ (strong assumption), we would find that the optimal rate can be 100%.

Intuition:
- Retention response significantly larger than selection response
- Productivity wedge is small
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Intuition:
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Optimal Rate

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- Intuition:
  - Retention response significantly larger than selection response
  - Productivity wedge is small
Discussion
Employer-side policies in disability insurance have been proposed to improve the equity, efficiency, and fiscal sustainability of DI programs.

Developed a model to incorporate the intended and unintended effects of such policies.

Increased employer responsibility can decrease DI claiming and increase retention.

Requires strong incentives: sickness claims are immediate.

Small but meaningful selection effects estimated.

Under some assumptions, the large retention and small selection response suggest that full experience rating could be optimal.

May be a way to provide social insurance to contingent workers.
Discussion

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May be a way to provide social insurance to contingent workers.
Extension: Risk-Averse Firms

- Firms may act as if risk averse (perhaps small and not fully diversified)
- Maximize a concave and separable function of productivity and cost: the hiring threshold must solve

\[
\int_{\lambda}^{1} v(\lambda) dF_\theta(\lambda) - [F_\theta(\bar{\lambda}) c_1(\eta) + (1 - F_\theta(\bar{\lambda})) c_2(w)] = 0. 
\]

(15)

- Different ranking of types: take into account higher moments
- \( \bar{\theta} \) higher
Extension: Type-Specific Wages

- Wage combination of average and type-specific productivity:

\[
\hat{w}(\theta) = \alpha w(\theta) + (1 - \alpha) w.
\] (16)

where

\[
w = \frac{\int_{\tilde{\lambda}}^{1} \int_{\lambda}^{1} \lambda dF_{\theta}(\lambda) dG(\theta) - M}{\rho \left( F(\tilde{\theta}) + \int_{\theta}^{1} F_{\theta}(\bar{\lambda}) dG(\theta) \right) + \int_{\theta}^{1} (1 - F_{\theta}(\bar{\lambda})) dG(\theta)}.
\] (17)

and

\[
w(\theta) = \frac{\int_{\tilde{\lambda}}^{1} \lambda dF_{\theta}(\lambda) - M}{\rho F_{\theta}(\bar{\lambda}) + (1 - F_{\theta}(\bar{\lambda}))}.
\] (18)
Extension: Type-Specific Wages

- If wages are fully type-specific ($\alpha = 1$, $\hat{w}(\theta) = w(\theta)$):

\[
\int_{\bar{\lambda}}^{1} \lambda dF_\theta(\lambda) - \left[ F_\theta(\bar{\lambda}) \eta \rho w(\theta) + (1 - F_\theta(\bar{\lambda})) w(\theta) \right] > M \tag{19}
\]

\[
\int_{\bar{\lambda}}^{1} \lambda dF_\theta(\lambda) - \frac{\eta \rho F_\theta(\bar{\lambda}) + (1 - F_\theta(\bar{\lambda}))}{\rho F_\theta(\bar{\lambda}) + (1 - F_\theta(\bar{\lambda}))} \left( \int_{\bar{\lambda}}^{1} \lambda dF_\theta(\lambda) - M \right) > M \tag{20}
\]

- Since $\eta \leq 1$, this condition is equally satisfied for all $\theta$

- If all workers can be offered their own expected product in wage, there is no loss on the selection margin, but there are distributional consequences (differentiated wages and pass-through)
In the general case \( \hat{w}(\theta) = \alpha w(\theta) + (1 - \alpha)w \), the hiring threshold \( \bar{\theta} \) solves

\[
\int_{\bar{\lambda}}^{1} \lambda dF_{\bar{\theta}}(\lambda) \left[ F_{\bar{\theta}}(\bar{\lambda}) \eta \rho + (1 - F_{\bar{\theta}}(\bar{\lambda})) \right] (\alpha w(\bar{\theta}) + (1 - \alpha)w) = 0.
\] (21)
## Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>Permanent Workers</th>
<th>Temporary Work Agency Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Hourly Wage (euros)</td>
<td>22.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Female (%)</td>
<td>46</td>
<td>54</td>
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<tr>
<td>Age 18-30 (%)</td>
<td>15.2</td>
<td>54.3</td>
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<tr>
<td>Age 31-40 (%)</td>
<td>23.3</td>
<td>18.7</td>
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<tr>
<td>Age 41-50 (%)</td>
<td>29.2</td>
<td>15.5</td>
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<tr>
<td>Age 51-65 (%)</td>
<td>32.4</td>
<td>11.4</td>
</tr>
<tr>
<td>Mean Healthcare Spending (euros)</td>
<td>1482</td>
<td>1224</td>
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<tr>
<td>Vocational Education (%)</td>
<td>48.1</td>
<td>63.7</td>
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<tr>
<td>Secondary Education (%)</td>
<td>6.6</td>
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<tr>
<td>Tertiary Education (%)</td>
<td>45.3</td>
<td>27.3</td>
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<tr>
<td>Disability Insurance Benefit Receipt (%)</td>
<td>0.36</td>
<td>0.47</td>
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<tr>
<td>Employed Next Year (%)</td>
<td>96.3</td>
<td>87.3</td>
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<td>At Same Firm Next Year (%)</td>
<td>83.9</td>
<td>38.9</td>
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<tr>
<td>Worker-years</td>
<td>40,496,153</td>
<td>2,020,368</td>
</tr>
</tbody>
</table>
Job Types in Largest Temp Work Agency

- Administrative
- Call center / Contact center
- Cleaning
- Commercial / Sales
- Construction
- Drivers
- Education
- Financial
- Healthcare / Nursing
- Hospitality / Catering
- ICT
- Industrial / Production
- Legal
- Logistics
- Management / Manager
- Marketing & Communication
- Medical
- Other
- Personnel & Organization
- Secretarial
- Security
- Technical
- Webcare

Percent

0 5 10 15 20

Webcare  Technical  Security  Secretarial  Personnel & Organization  Other  Medical  Marketing & Communication  Management / Manager  Logistics  Legal  Industrial / Production  ICT  Hospitality / Catering  Healthcare / Nursing  Financial  Education  Drivers  Cleaning  Commercial / Sales  Call center / Contact center  Administrative
## Disability Insurance Benefit Receipt—Results

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
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<th>(5)</th>
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<th>(7)</th>
<th>(8)</th>
</tr>
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<tbody>
<tr>
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Controls × × × ×
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Exclude 2009 × × ×

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## Disability Insurance Benefit Receipt—Results

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Standard errors in parentheses
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Disability Insurance Benefit Receipt—Comparison with Prior Studies

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Standard errors in parentheses
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## Short-Term Disability Insurance Benefit Receipt—Results

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Standard errors in parentheses
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### Short-Term Disability Insurance Benefit Receipt—Results

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Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
## Short-Term Disability Insurance Benefit Receipt—Results

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Standard errors in parentheses

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## Short-Term Disability Insurance Benefit Receipt—Results

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Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
### Employment—Results

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<td>0.27485***</td>
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**Standard errors in parentheses**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
## Employment—Results

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<th>(7) Age 51-65</th>
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Standard errors in parentheses
* p < 0.1, ** p < 0.05, *** p < 0.01
## Employment—Results

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Standard errors in parentheses
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### Employment—Results

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Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
### Employment—Results

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*Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
## Worker Selection—Results

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**Standard errors in parentheses**
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$