

Topic Centre WE 2008
Economic incentive schemes for OSH
prevention in enterprises – Literature survey

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TNO | Knowledge for business



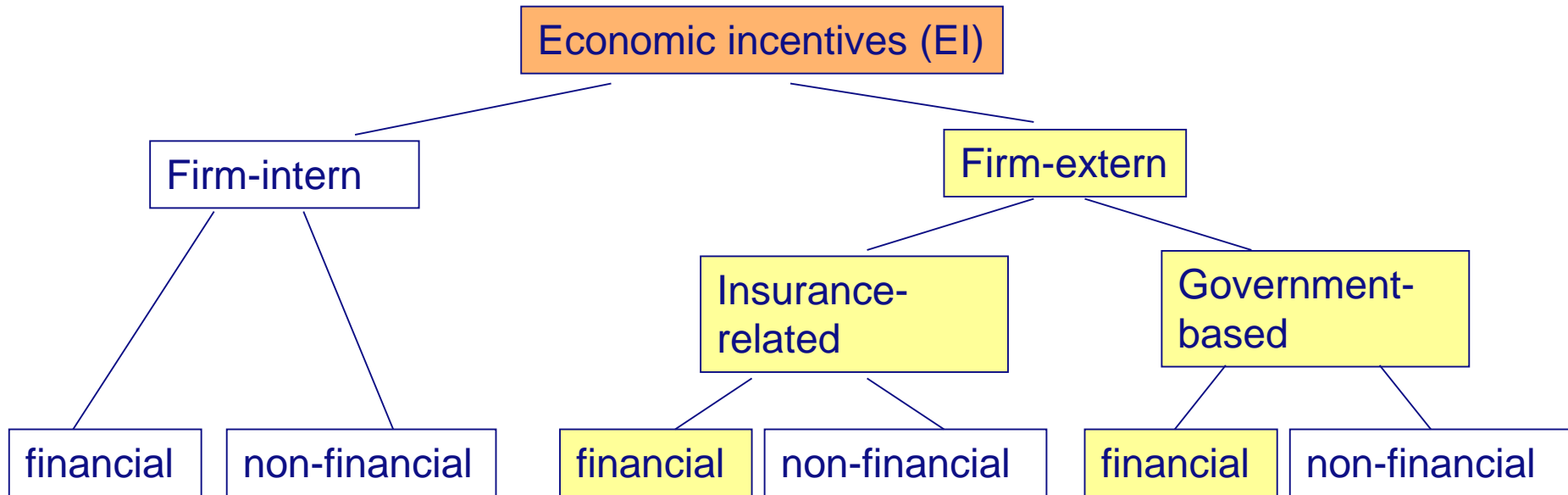
Background and aim

- joint work with task partners **S. de Meyer** (Prevent), **J. Elo-Schäfer** (Kooperationsstelle Hamburg), **M. Pecillo** (CIOP)
- initiated and financed by the **European Agency for Safety and Health at work (OSHA)**
- **Aim of the study:**
overview about economic incentive models applied in firms to foster OSH prevention measures

Agenda

- I. Definition and classification of economic incentives
- II. Economic incentives for OSH prevention
- III. Scope of literature search
- IV. Empirical evidence – literature overview
- V. Summary of main results
- VI. Research gaps & criticism
- VII. Conclusions
- VIII. Policy recommendations

I Classification of economic incentive schemes



Definition (OSHA): External economic (financial) benefits to employers to stimulate improvements to workers' safety and health.

II Economic incentives for OSH prevention

- Strong case for EI by European Foundation and ILO (P. Dorman (2000)):
 - EI are **directly linked with business performance** (impact on productivity easily visible to managers)
 - EI can stimulate **continuous improvement** (vs. regulation specifying minimum performance level)
 - EI are **outcome-oriented and forward-looking**, i.e. by nature apply to both, traditional and emerging risks
 - EI **encourage problem-solving and innovation** (vs. method-focus)
- Wright et al.(2005): manager survey indicates **advice and EI best method** to stimulate prevention measures (vs. enforcement, reputation risk, bigger fines, more expensive insurance)

III Scope of literature search

- Aim: identify recent (~ 2000-2008) scientific literature in English
- Steps taken:
 - List of relevant search terms (English)
 - OSH-specific databases: **OSH update**, **Scopus**.
 - Dutch university database **Picarta**, Dutch OSH-specific database **Arbobibliothek**.
 - Google scholar for specific works identified from references
 - Screening identified literature for relevancy
 - Develop structure and fill in paragraphs with identified literature
 - Excel template with summary of each piece of work
 - Final adaptation of structure

IV Empirical evidence – literature overview

Initiator	Incentive measure	Effectiveness	Source
External state-based incentive programs			
Government	Introduction of direct OSH regulation (incl. case study on Poland)	Questionable; high administrative costs and regulatory error; often fails to account for variations among firms and technologies	Mustard (2005); Tompa et al. (2007); Thomason (2003); Durbin et al. (1998); Paton (2007); Podgorski (2006)
Government	Matching funds	Considerable possibility; high in administrative costs for firms and government	Paton (2007)
Government	Enforcement by regulatory system of deterrence, i.e. <i>general</i> and <i>specific</i>	Questionable; <i>specific</i> deterrence with positive effect; evidence remains unclear	Tompa et al. (2007), Paton (2007)
Government	Linking economic incentives to audits or intervention programs (Canada)	→ ???	Toren et al. (2003)
Government	Taxes (Sweden)	Yes; restricted to companies paying corporate tax and making a taxable profit	Toren et al. (2003); Paton (2007); NERA report in Paton (2007)

IV Empirical evidence – literature overview

Initiator	Incentive measure	Effectiveness	Source
External insurance-related incentive programs			
Insurer/ Government	Cash benefits = Workers' compensation benefits	No; the higher the benefits the higher the claims rate (claims reporting moral hazard)	Fishback (1987), Thomason (2003), Durbin et al. (1998)
Insurer/ Government	Incentives on other premiums than workers' compensation, e.g. employers liability insurance	Yes; high potential	Wright et al. (2005)
Insurer/ Government	Manual experience-rating of workers' compensation insurance premiums	Yes; with some ambiguous results; generally fosters claims management and accident prevention as based on firm's claims experience	Thomason (2003), Tompa et al. (2007), Durbin (1998)
Insurer	Two-step premium assessment rates (another form of experience-rating)	Yes; possibly better than experience-rating due to higher flexibility for firms	Mustard (2005), Tompa et al. (2007)
Insurer	Partial insurance	Yes; frequency of claims and total claim costs decrease	Durbin et al. (1998)

IV Empirical evidence – literature overview

Initiator	Incentive measure	Effectiveness	Source
Internal firm-based incentive programs			
Firm	Wage premiums/ wage differentials (large internat. Company)	Yes; in more recent studies; 6500 employee dataset: positive results	Viscusi (1995); Engelland et al. (2004); Strand/ Johanson (1980)
Firm/ Government/ Insurance	Monetary financial reward system for weight loss amongst overweight employees	Yes; short-term weight loss motivation	Finkelstein et al. (2007)
Firm	Cash rebates for physical activity program (IBM)	Yes	Herman et al. (2006)
Firm	Monthly lottery (Dutch firm)	Yes; also non-monetary reward (public announcement of winners) mattered	Hassink et al. (2005)
Firm	Non-material incentives (feedback and training in construction)	Yes; improvement of on-time delivery and completion rates; even though workers said they prefer material incentives behavior was changed by non-material incentives	Winn et al. (2004)

IV Empirical evidence – literature overview

Initiator	Incentive measure	Effectiveness	Source
SME-directed incentive programmes			
a. General programmes			
Insurer	Insurance-related incentive schemes	Probably not since based on accident risk which is particularly low in SME	Walters (2001)
Government, EU	Grants, awards or tax connection schemes (separated from insurance system)	Fairly applied and untested so far	Walters (2001)
Government, EU	Education-centered approaches	Unclear due to little evidence	Eakin (2000), Micheli/ Cagno (2008), Walters (2001)

IV Empirical evidence – literature overview

Initiator	Incentive measure	Effectiveness	Source
b. Case specific			
Government/ accountant business	Accountants for OSH advice	Yes, but limited; lacking OSH expertise and lack of practical implementation advice by accountants	Australia/ New Zealand; Eakin et al. (2000), Walters (2000)
Government/ trade unions	Regional safety representatives (appointed by trade unions) take over visits of SMEs from Labour Inspectorate (Sweden)	Yes; cooperation between independent representatives and small firm owners is surprisingly good; more inspection visits	→ ???
Government	Combination of funding, training and three-year technical expertise and support (Canada, Safety Community Foundation)	Yes; lost-time injury declined; better tracking of near-misses of workers by supervisors (since 1997 more than 6000 firms participated in Ontario)	Eakin et al. (2000)
Government/ Industry	Dialogue-consultancy approach between Work environment professionals WEPs and SME owner	Yes	Denmark

Legend: deep green = clearly positive evaluation results; light green = positive, but with restrictions; yellow = untested/ too little evidence; orange = negative, but with restrictions; dark red = clearly negative evaluation results

Note: Table is work in progress.

V Summary of main results

- overly positive evaluation of EI schemes in literature
- introduction of regulation: no clear reduction effect on frequency of work-related injuries
- enforcement of regulation: *specific* deterrence yields positive and significantly higher effect on sick-leave than *general* deterrence
- taxes, linking EI to audits/ intervention programs and matching funds are promising approaches with some restrictions
- two-step premium assessment possibly even better than manual experience rating of workers' compensation insurance
- firm-internal financial incentive schemes make strong case for EI
- employers' liability insurance may be a good starting point for EI
- simple, low-cost solutions, disseminated by personal contact for SMEs

VI Research gaps & criticism

- **measurement problems**, i.e. (uncontrollable) contextual factors, study design and selectivity, temporal sequencing, data limitations (→ Tompa et al. 2007, 2008 TNO/SEO 2008)
- **often unclear and ambiguous effects** of OSH regulation/ inspection and EI effectiveness (Paton, 2007)
- **comparability problem** due to differences in **definition of incentive schemes**, **research entity**, **sample size** and **methodological** approach
- need for **SME-specific EI** and **evaluation schemes** (Walters 2001)
- Lacking data:
 - **Overview statistics**, e.g. number of firms applying EI (national, EU)
 - **Contextual factors**, e.g. organizational attitude, sector, size (firm)

VII Conclusions – in a nutshell

- **combination of EI, advice, enforcement and persuasion** is best for businesses
- which works best may depend on **general attitude of the company** towards OSH (Wright et al. 2005):
 - For convinced: persuasion and incentives
 - For negative: enforcement
 - For motivated: advice and support
- company attitudes depend on **sector** and **size of company** but also on **uncontrollable factors**
- How to **effectively** approach a **larger number of SMEs**?
 - Financial limitations, employee defensiveness, language differences and low literacy, reliance on external support

VIII Policy recommendations

- **Cash benefits** in form of workers' compensation are **not enough** (→ *increasing* claim frequency)
- Any **legal regulation** should be **accompanied by incentives/sanctions** to make them effective
- **Taxes** are effective, but restrictive in application
- **Experience-rating** and **two-step premium assessment rating** schemes show promising evaluation results
- **Firm-intern EI** proven particularly **creative and successful** and worthwhile to test and implement more widely
- **SME-specific** research and EI development is needed
- **Overview statistics** are needed

- **Generalization** and **comparability of scientific results** need improvement but at the same time **case-specific applications for businesses** ('maatwerk') are needed!
- More **interdisciplinary approaches** between OSH experts and economists/ econometricians are needed!

ADD UP: Design of EI schemes

- 1. Attention to 3 key aspects for the implementation of EI (MunichRe 2005):**
 - Reliability of the workers' compensation system
 - Technical and social/ political feasibility of EI
 - Weakening of credibility of workers' compensation system by too many changes of EI system in a short time period

- 2. Accounting for SME-specific problems:**
 - develop networks of SMEs (Mose & Karqvist 2004)
 - holistic and integrative approach incl. workers and management (Lippin et al. 2000)
 - trust-based dialogue between OSH consultants and SME owners (Eakin et al. 2000)

- 3. Consideration of moral hazards**
 - Claims-reporting moral hazard
 - Risk-bearing moral hazard

ADD UP: Applied evaluation methods – literature

- **Effect indicators frequently used in the literature:**
 - costs of absenteeism, staff turnover, true production costs (including costs of accidents and illnesses)
 - frequency of injuries, industry aggregate accident rates
 - frequency/ severity of claims
 - consumer satisfaction, employee motivation, etc.
- **Durbin et al. (1998):** strongest research on experience rating of workers' compensation does **not use insurance claims or insurance costs** to measure OSH effect but
 - benefit-firm size interaction
 - natural experiments
 - fatality rates
- **Tompa et al. (2006, 2008):**
 - evaluation often **introduced too late** and in **secondary manner**
 - **interdisciplinary approaches** needed (e.g. econometricians, OSH experts)

ADD UP: Applied evaluation methods – TNO examples

- Diverse **monitoring and evaluation tools** (e.g. periodic “Monitor Arbeidsongevallen”)
- **Handbook “Effectiveness measurement** of labor market policy at the individual level” (TNO/ SEO)
- **Cost-benefit analysis** of e.g. workplace health investments in companies (made-to-measure approach)
- **Labor productivity measurement and business applications** (interactive approach)