Author's response to reviews

Title: Does the company's economic performance affect access to occupational health services?

Authors:

Eila Kankaanpaa (eila.kankaanpaa@ttl.fi)
Aki Suhonen (ski.suhonen@tahkospa.fi)
Hannu Valtonen (hannu.valtonen@uku.fi)

Version: 2 Date: 13 July 2009

Author's response to reviews: see over
Dear Dr. Iratxe Puebla,

We thank the reviewers and your associate editor for their comments. We were able to use almost all of them and we feel this has improved our paper.

**Reviewer: H.Nico Nico Plomp**

**Major Compulsory Revisions**

1. In order to generalize the conclusion beyond the Finnish situation more specific information on the character of the obliged OHS –products (when can one speak about fringe benefit?) and the reimbursement system (are all deliveries compensated?)

Our response:

We present now Finnish occupational health services earlier in the text (proposed by the associate editor) and give more detailed information about the services and the reimbursement system.

Changes on page 6:

**Methods**

**Occupational health services**

It has been obligatory for employers to organize preventive occupational health services for their employees since 1979. According to a population survey conducted in 2006, two out of three employees had attended an occupational health examination in the past three years, and around half of them had had occupational health personnel assessing their workplace in the past three years. Although organizing curative medical services is voluntary for employers, over 90% of employees can obtain GP level services from their OHS unit. Around half of the primary care level GP visits of these employees take place within OHS [10]. A more detailed description of the Finnish OHS can be found in [3, 11]. At the moment, OHS is the only health care system in Finland that provides curative medical services for users without out-of-pocket payments. Therefore, the curative medical services can be regarded as fringe benefits.

Finland introduced public health insurance to reimburse the costs of curative medical care in the private sector in 1964. Since then employers have got reimbursement for the costs of OHS. Employers first pay all costs of OHS and apply for reimbursement within six months after closing their accounts. The share of the costs reimbursed has varied during the over 40 years of reimbursement. In 2001 and still nowadays, the reimbursement is 60% for preventive and 50% for curative medical services. So, despite of the reimbursement the firms will always bear a considerable part of the cost themselves.

2.

a) Although the assumption that was made (economic performance affects health cost expenditures) was not confirmed, hardly any theoretical reflection is made on the ‘process or mechanism’ between economic performance and health cost expenditures.

Our response:

We did our best to explain the mechanism - how economic performance effects company's expenditure on OHS.
The paragraph in Background chapter (p. 3):
Filer and Golbe [4] have described how company's investment in workplace safety is connected to company's economic performance. In general, a company's financial structure substantially affects its real operating decisions and the amount of risk the company is willing to bear, which have an impact on firm's input choices. Both safety and occupational health services are such inputs for a company.

In making decisions on OHS investments the company is balancing the costs and benefits of OHS. Preventive services are supposed to lead to lower occupational accidents and diseases, lower sickness absence and disability pensions which all improve the economic performance of the company [5-7]. Curative medical services within OHS have similar objectives. In addition, curative medical services can be regarded as fringe benefits, that is, the employer offers employees health services (or health insurance) in place of or as an additional monetary wage [8]. Offering generous curative medical services would then lead to employees' lower wage demands.

Investments in safety and health compete with other investments in the company. While companies make decisions on resource allocation the economic situation of the company might affect OHS differently than other input decisions. Acquiring outside funding for OHS investments will be difficult and therefore investment decisions on OHS are dependent on the liquidity of the company (cash flows). Cash flows indicate if there is internal funding available in general, also for investments in OHS.

Filer and Golbe [4] studied investments in safety which also includes investments in capital goods, like equipment. They summarize various models and conclude that the impact indebtedness has on safety investments is ambiguous, mainly due to the capital nature of safety investments. In our study, the costs for occupational health services include only the payments for the OHS providers that will be paid immediately, and the benefits of good OHS will be received in the future. Therefore, we expect that high leverage and the risk of bankruptcy will lower the investment in occupational health services. This is due to share owners' and bondholders' conflicting interests. Owners bear the costs of OHS, in case of bankruptcy the bondholders become the owners of the company and will receive the fruits of OHS, or the costs of neglect.

b) There is a lot of literature on cost-benefit of OHS-services.

Our response:
We added in the Background section company's cost-benefit judgement (see point 2a). Due to associate editor's recommendation we included in the discussion section a reference to our previously published article that concerns the benefits of OHS.

New reference on page 13 (the two last sentences):
This means that the expenditure on OHS has only a minor impact on a company’s finances. This was also confirmed in our article based on the same data [16]. Company's investment in preventive OHS did not have a positive impact on company's economic performance.

c) The relationship between economic performance and health service expenditures is probably not linear;
Our response:
We tested the OLS model specification with the RESET-test. The test is used for detecting non-linearities and omitted variables. Based on the results of the test we have log transformed the expenditure variables (table 6).

d) in an economically very bad (favourable?) situation an effect might occur.

Our response:
This is what we are studying: if companies in worse economic situation would invest less in OHS than companies doing better. Due to the prospective study design those firms that "disappeared" during the study period are not included in the study. This might bias the results, as discussed already on page 11.

We have included industry dummies in our model which will grasp the overall economic fluctuation.

e) There might be confounding variables such as quality of HRM department, size of the company etc. Eventually opinions of employers or trade unions can be quoted in order to produce hypothetical explanations.

Our response:
Human resources management (and HRM practices) might be connected both to the economic performance of the company and its expenditure on OHS. The explanatory power of the regression model for curative medical services was quite high and the RESET-test shows that there is no need to worry for omitted variables. The model for expenditure on preventive services had lower $R^2$ and the value of RESET-test shows that the model is not the best specification. For the expenditure on preventive services employees', trade unions' and safety delegates' role might have an influence.

Filer and Golbe (2003, p. 375) had a panel data in their study and therefore could study also if better managed firms have both higher safety (less violations) and higher operating margin. Their random effects model would have picked up the managerial competence effect. Therefore, they concluded that "the negative relationship between operating margin and safety violations is not primarily an artifact of managerial competence."

Once we do not have any data on this kind of issues at our disposal we would rather discuss only economic performance and expenditure. The focus of the article is to study the relationship between the profitability of the company and the expenditure on OHS, not to explain completely the expenditure itself. The prospective study design improves the conclusions on the relationship.

The size of the company has been taken into account (turn over in the model).

f) These assumption made on variables in the model (% blue collar workers for instance) are not underpinned due to lack of reflection on the mechanism.

Our response:
The share of blue collar workers is included in the model for two reasons. Firstly, we thought that the share represents the need for preventive services. The higher the share of blue collar workers the higher e.g. the number of compulsory health examinations. Secondly, the share represents also socio-economic differences in health status. The high share of blue collar workers would imply more curative medical care. Both would have an impact on the OHS expenditure.

g) Reflections, hypothetical explanations should be presented in the introduction as well in the discussion section.

Our response:
See point 1 above for the change in the Background chapter. On page 12 we discuss the reasons for occupational health services differ from safety studies.

3. Assumptions on level of expenditures and success of services (as mentioned in Conclusion paragraph) are not founded in the data and should be left out. Please be focused on the objective

Our response:
There were differences in the expenditure according to industry. We wanted to take up the point that although the Finnish system with obligation and reimbursement is good in that sense that it is not dependent on company's economic performance. Still, the regulation and subsidies are not enough to allocate the OHS resources according to the needs. We do not discuss the success of services in other terms like e.g. effectiveness. We made the following changes in the text:

Text left out (reviewed version pages 12-13):
Regional differences in expenditure are connected to the supply of OHS. The costs for curative medical services were higher in densely populated municipalities in Southern Finland, where also the providers of OHS are located [10]. In Northern Finland the costs for preventive services were higher compared to Uusimaa, mainly due to longer distances from workplaces to OHS units which increases the costs of the services.

The cost for both curative medical services and prevention were lower in municipal health care centres. Their personnel resources are scant compared to other providers, which also leads to less services provided per employee, and lower costs. In addition, the prices in municipal health centres have been lower than in for-profit providers.

The costs of preventive OHS varied according the industries. If the need for preventive OHS is assessed with the incidence of fatal occupational accidents, construction and manufacturing companies display an appropriate match of higher costs and greater need. The incidence of occupational accidents is highest in 'manufacturing' and 'transport, storage and communication', the latter not having high costs of prevention [11]. The incidence of occupational diseases is highest in 'food products, beverages and tobacco manufacturing', in 'construction' and 'agriculture' [12], only construction having higher costs for prevention.

In this study companies with a higher percentage of white-collar workers spent more on curative medical services than in blue-collar dominated companies. Also in other studies, it has been found that OHS in Finland favours the higher income groups [13]. At the moment, OHS is the only health care system that provides services for users without out-of-pocket payments.
Differences in expenditure on OHS in various industries could not be explained by variation in the incidence of occupational diseases or injuries.

Text left out Key terms (MeSH):
resource allocation

Text from conclusion (reviewed version page 13):
Yet, the system is not entirely successful in optimal allocation of resources according to needs. Expenditure on prevention is not the highest in the riskiest industries and white-collar workers benefit more in terms of free use of curative medical services. In addition, regional differences are connected to the supply of the OHS services.

... moved to present discussion p. 12-13
The OHS system is not entirely successful in optimal allocation of resources according to needs. Expenditure on prevention is not the highest in the riskiest industries [17, 18] and white-collar workers benefit more in terms of free use of curative medical services [19]. In addition, regional differences are connected to the supply of the OHS services.

Discretionary Revisions
4. a) Interpretation of table 5 and 6 becomes easier when odds-ratio’s are presented.

Our response:
We made the changes in table 5, and the abstract. Ordinary least square regression results (table 6) will remain. The coefficients cannot be presented as odd-ratios.

b) Quality of written English: Needs some language corrections before being published

Our response:
We did our best to improve the language.

Reviewer 2's comments:
"In a quick review I did not found any contraction or invalid data-- the conclusion seems to be within reasonable scientific terms. So on this point of view this article seems to be acaptable for publishing. "

No changes to the text.

Associate Editor:
1. The authors need to describe the financing of occupational health services in Finland more clearly. What expenses does the firm undertake? Are firms reimbursed for all expenses related to occupational health, or only for curative visits? If nearly all firms are reimbursed, then why would economic performance affect occupational health programs at all, since firms do not have
any cost to operate OH programs? The material on page 7 "Occupational health services? needs to be presented earlier in the paper and in more detail.

2. What does it mean if a firm does not apply for reimbursement? Since firms with fewer than 20 employees are not required to provide services, does this explain the high rate of firms not requesting reimbursement? Please explain this in more detail.'

Our response:
We moved the description of Finnish OHS earlier in the text. This comment helped in clarifying OHS and reimbursement system. All employers in Finland are obliged to have preventive services. There is no rule that small (less than 20 employees) enterprises would not have to provide OHS. Although there is a reimbursement system not all costs are reimbursed. About 50% of the costs will be left to the employer and therefore the economic situation of the company might affect its willingness to invest in OHS. We added two references for those readers who would like to know more about the Finnish OHS. (See reviewer Plomp, point 1)

3. Can you also document in the Methods section of the revised version of the manuscript the details of the institutional review board that granted ethical approval for the study, or the circumstances under which the study is exempted from such requirement.

Our response:
Due to strict data protection both at the Social Insurance Institution and the Statistics Finland we were not allowed to handle the original data ourselves. We had the data at our disposal only after the merging and recoding of company identification codes.

We changed the following sentence on page 7:
The Social Insurance Institution register was merged with the Statistics Finland data at the Statistics Finland by using firm-specific identification codes. To protect the privacy of the companies we had at our disposal only the merged unidentifiable data.

4. Your recent article: http://www.biomedcentral.com/1471-2458/8/130, seems closely related to the scope of the current submission, we would suggest that you also discuss that previous work in your revised manuscript.

Our response:
Due to reviewer Plom's wishes we included company's judgement on the costs and benefits of occupational health services in the background section (see Plom, point 1). Therefore, our previous article could easily be added in the discussion with the main result. The following change was made on page 12 (two last sentences).

This means that the expenditure on OHS has only a minor impact on a company’s finances. This was also confirmed in our article based on the same data [16]. Company’s investment in preventive OHS did not have a positive impact on company’s economic performance.

Eila Kankaanpää, Aki Suhonen and Hannu Valtonen