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## Adverse workplace conditions, high-involvement work practices and labor turnover: Evidence from Danish linked employer–employee data

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#### ABSTRACT

Using Danish linked employer–employee data, we find that: (i) exposing the worker to physical hazards leads to a 3 percentage point increase in the probability of voluntary turnover from the average rate of 18%; (ii) working in night shift results in an 11-percentage point hike; and (iii) having an unsupportive boss leads to a 6-percentage point jump. High involvement work practices are found to play a significant role in mitigating the adverse effects of workplace hazards. Finally, the worker under adverse workplace conditions is found to improve the 5-year odds of rectifying such workplace adversities by quitting the firm.

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#### 1. Introduction

This paper provides new evidence on the exit behavior of workers who are exposed to workplace hazards and the potentially important role that high involvement work system (a cluster of complementary human resource management practices designed to promote employee involvement) can play in mitigating such exit behavior. In so doing, the paper integrates two very different streams of research: that of workplace hazards and that of high involvement work systems, and

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provides researchers, practitioners and policy makers with fresh insight on interplay between workplace hazards and high involvement work systems.

Our Danish linked employer-employee data are uniquely suited for the objective of our study. First, unlike typical workplace hazards data used by prior researchers, our data provide information not only on workplace hazards but also on high involvement work systems, which will allow us to test our novel hypothesis, i.e., the quit-enhancing effect of workplace hazards can be mitigated by high involvement work systems. Second, the data provide information on an unusually comprehensive list of workplace hazards, ranging from standard physical hazards (such as loud noise, vibration or poor lighting) to 'human hazards' (such as workplace violence and bullying, and unwanted sexual advancement). Third, our data allow us to distinguish voluntary turnover from involuntary turnover, which represents an important advantage because prior research has shown that voluntary turnover is a substantial and significant predictor of lower organizational performance. Finally, we link the 2000 data to the 2005 data and study whether the worker exposed to adverse workplace conditions can

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improve her odds of rectifying such workplace adversities in 5 years significantly by separating from the firm voluntarily.

The paper is organized as follows. The next section discusses prior research, followed by the presentation of the empirical strategy. In Section 4 we present the econometric specifications and our main findings. Section 5 provides additional evidence on the long-run consequences on workplace conditions of voluntary turnover, followed by the concluding section.

#### 2. Prior research

There is a long stream of empirical research examining possible linkage between workplace hazards and turnover. Most of such studies use industry-level or occupational-level work characteristics and report negative correlations between working conditions and labor turnover (e.g., Viscusi, 1979; Bartel, 1982; Herzog and Schlottmann, 1990; Gronberg and Reed, 1994). Another strand of the literature explains employee quit or job durations directly by means of job satisfaction scores, the employee's characteristics, and firm characteristics, but without information on job attributes (e.g. Flanagan et al., 1974; Freeman, 1978; Clark and Georgellis, 1998; Ward and Sloane, 2000; Clark, 2001; Kristensen and Westergard-Nielsen, 2006; Delfgaauw, 2007; Levy-Garboua et al., 2007). On the one hand, these studies discover that dissatisfied workers are more likely to separate from their current matches, and suggest that the self-assessed level of job satisfaction is a good predictor for job mobility beyond wages. On the other hand, Akerlof et al. (1988) and Altonji and Paxson (1988) present evidence suggesting the reverse causality, or job mobility resulting in higher job satisfaction.

More recent studies started to take advantage of the emerging availability of detailed data on workplace-specific attributes as opposed to industry-specific or occupation-specific attributes. For instance, Garcia-Serrano (2004) uses such data from Spain and reports evidence that workers with adverse working conditions are more likely to consider quitting. Bockerman and Ilmakunnas (2009) are perhaps the closest to our study. They use detailed individual-specific working conditions data from Finland and show that workers exposed to adverse working conditions are more likely to consider quitting and indeed end up separating from their present employers. However, neither study considers the possible mediating role of human resource management practices. In addition, Garcia-Serrano (2004) considers only employee intentions to quit, whereas Bockerman and Ilmakunnas (2009) do consider actual separations but fail to distinguish between voluntary and involuntary separations.

Finally, as discussed above, the literature rarely examines whether or not workers will actually improve their adverse workplace conditions through voluntary turnover, and if so to what extent. We believe this is an important omission from the literature, for if voluntary turnover indeed leads to improved workplace conditions, workers exposed to adverse workplace conditions will continue to take this exit option unless the firm actually alleviates its adverse workplace conditions directly or mitigates their effects on voluntary turnover through high involvement work systems.

The second literature we tap into is a rapidly growing literature on high involvement work systems. The literature points to the real possibility of an establishment boosting its performance by adopting a variety of complementary new work practices (often called HIWPs, or High Involvement Work Practices). First, in the high involvement work system, front-line workers will be given opportunities to exert discretionary effort, acquire useful local knowledge, and share it with their co-workers, and higher-level managers. Second, if the interest of workers is not aligned with that of the firm, workers will have little incentive to take full advantage of such opportunities. The interest alignment between workers and the firm in cooperatives is fostered often by information sharing mechanisms through which management shares important information with workers, and fosters their

loyalty and commitment to the firm. Third, careful screening, recruitment and sustained training are often an integral part of the high involvement work system.

There is an enormous amount of previous empirical work in this broad area and especially as it concerns the impact of such new work practices upon business performance (see, for instance, Combs et al., 2006 and Ichniowski and Shaw, 2009 for the recent literature review). However, for the most part the empirical economics literature has not paid detailed attention to the actual process/mechanism through which HIWPs result in better enterprise performance.<sup>1</sup>

This paper provides fresh insight and evidence on the actual mechanism through which the high involvement work system results in better enterprise performance by studying the turnover-reducing effect of HIWPs. As discussed above, much of information generated and shared under the high involvement work system tends to be rather specific to the firm or even to the workplace. Moreover, training received by workers under the high involvement work system is also often specific to the firm. The standard human capital theory predicts that workers with such firm-specific knowledge and skill are less likely to separate from the firm (Becker, 1964). In short, voluntary turnover can be an important barometer of the "health" of a high-involvement work system.

Though the literature on the effects on turnover of HIWPs is thin, compared to work on the effects on productivity of HIWPs, certainly we are not the first to study this issue. We can trace the literature back at least to Huselid (1995), followed by a number of important studies, such as Batt et al. (2002), Batt and Valcour (2003), Batt (2004), Bauer and Bender (2004), Doellgast (2008), and Askenazy and Galbis (2007).<sup>2</sup>

However, we are the first to propose and test potentially important interplay between workplace hazards and HIWPs in voluntary turnover behavior, i.e., the turnover-increasing effect of adverse workplace conditions can be tempered by HIWPs since HIWPs can function as effective employee voice institutions and hence that workers exposed to workplace hazards are less likely to take the exit option with such HIWPs.

#### 3. Empirical strategy

#### 3.1. Data

The data we use in this paper are derived from two sources. The first is Statistics Denmark Integrated Labour Market Database (IDA) from Statistics Denmark. IDA provides detailed information on the population of all Danish establishments and all individuals between 15 and 74 years old. Importantly data on establishments are consistently linked to data on individuals, using the unique identification numbers assigned to all establishments and individuals.

Second, we match IDA with "The Danish Work Environment Cohort Study (DWECS)" collected by the National Research Center for the Working Environment that provides unusually rich information on working conditions and exposures to occupational hazards at the individual level. The DWECS consists of a split panel collected every

<sup>&</sup>lt;sup>1</sup> There are, however, a handful of studies that do make important steps in beginning to uncover such process/mechanism. First, a number of studies (e.g., Lazear, 2000; Kleiner and Helper, 2003; Fernie and Metcalf, 1999; Paarsch and Shearer, 1999, and Knez and Simester, 2001), focus on the effects on individual worker performance of the switch from time rates to piece rates or to performance pay, and provide direct evidence on the impact of performance pay upon individual worker behavior. A related line of work examines the effects on individual worker performance of the shift to team production (e.g. Batt, 1999 and Hamilton et al., 2003). Gant et al. (2002) study the impact of HIWPs on the nature of social networks and knowledge sharing among workers.

<sup>&</sup>lt;sup>2</sup> The literature on the effect on employee turnover of high involvement work systems can be viewed as an extension of the exit-voice theory of trade unions (Freeman, 1980 and Freeman and Medoff, 1984) to include non-union voice mechanisms (see, for example, Batt et al., 2002).

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