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Teamwork, monitoring and absence

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ABSTRACT

We present a model showing that firms with interdependent worker productivity (team production) have a higher cost of absence and as a consequence will spend additional resources on monitoring absence. As a result, firms with team production should have lower absence rates, all else equal. Using the Workplace Employment Relations Survey (UK), we are the first to estimate each of these related associations showing that absence has a greater cost in the face of team production, that firms with team production engage in greater monitoring and that firms with team production have reduced absence.

1. Introduction

The economic costs of absenteeism are enormous and while absenteeism has been of concern to economists, it has not generated the attention that such costs would dictate.[1] Economists most commonly view absence from work as a dimension of labor supply, yet if contractual hours are not defined by the employment relationship, the very concept of absenteeism would not exist. Thus, Brown and Sessions (1996, p. 38) call for an "explanation for the determination of hours constraints," suggesting that economists should place more emphasis on the role of labor demand in determining contractual hours and hence absence.

Several recent studies respond to this call by isolating the role of firm side variables in determining minimum contractual hours and their enforcement. Barmby (2002) and Barmby et al. (1994) show that the structure of the labor contract is critical in determining the daily cost of absence and thus its incidence. This follows earlier work in which Barmby et al. (1991) show that the structure of the sickness pay scheme influences absence, contending that managers structure such schemes based on the underlying cost of absence to the firm. Coles and Treble (1996) build on Weiss (1985) to argue that interdependent

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[1] Estimates for the United Kingdom in 1980s put the figure at 6 billion pounds a year (Brown and Sessions, 1996), in the United States a figure of 24 billion dollars a year has been offered (Dunn and Youngblood, 1986), and more recent figures from Germany put the figure at 62 billion DM or nearly 2 percent of German GDP (IWD, 1997).

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production (teamwork) is critical in determining this underlying cost to the firm, while Coles et al. (2007) make a related point arguing that "just in time" inventory technology (a proxy for teamwork) increases the cost of absence and causes firms to invest more in reducing absence. Barmby and Stephan (2000) show that larger firms with teamwork can profitably conserve on buffer-stock workers, reduce monitoring of absence and thus allow absence rates to increase. Heywood and Jirjahn (2004) use German data to show that workplace teams, a proxy for teamwork, reduce the absence of blue-collar workers.[2]

The typical theoretical presentation in this literature relies on three relationships. First, workplaces characterized by teamwork have a higher cost of absence. Second, this higher cost leads to greater expenditures, usually on monitoring, by the firm to reduce absence. Third, the increased expenditures on monitoring reduce the rate of absence of firms with teamwork below that of firms without teamwork. Our theoretical motivation presents a representative model isolating each of these relationships. To date none of the studies on the subject have estimated all three of these relationships, leaving more open than necessary the possibility that the hypothesized relationship between teamwork and absence may flow from causation other than that typically claimed.

Using data from the 1998 Workplace Employment Relations Survey (WERS), we estimate the determinants of absence rates, confirming that a series of proxies for teamwork are associated with significantly reduced absence. This result persists even as many traditional results from the empirical absence literature are confirmed. Importantly, we move behind this relationship to show that absence rates have a larger cost in the presence of teamwork and that firm monitoring is greater in the presence of teamwork. While the finding of a relationship between teamwork and absence in the UK is important, these two additional and novel findings are critical for supporting the causation often outlined in the literature.

In what follows, Section 2 explains the connection between teamwork and absence. Section 3 describes our data and provides descriptive statistics. Section 4 presents the empirical estimations, and Section 5 concludes.

2. Teamwork and absence

Deardorff and Stafford (1976) consider technologies that require the simultaneous presence of an entire shift of workers, showing that the profitability of the firm depends on its ability to coordinate essentially identical hours for each worker. Duncan and Stafford (1980) pick up on this by contrasting two extremes. The first, illustrated with a typing pool, has no teamwork. The output lost by a single worker's absence is only his or her own increment, the typing of that worker. The second, illustrated with an assembly line, has complete teamwork as the finished product depends on each worker completing his or her step along the line. Here the output lost by a single worker's absence is, in the extreme, the entire output of the shift. Weiss argues more formally that low rates of absenteeism are highly valued when production involves teamwork. He imagines a critical number of workers necessary for production. Excess workers add nothing to output and if the number of workers present drops below the critical value, output drops to zero. Recent theory represents this extreme with the 'o-ring' production function (Kremer, 1993).

The empirical literature usually does not directly observe teamwork. Proxies for the threat of dismissal or the cost of job loss are typically used as independent variables thought to reduce absence.[3] While such variables may play a role, they are endogenous responses to the underlying extent of teamwork. Thus, in firms without teamwork the cost of absence is minimal and the need to threaten dismissal or pay efficiency wages is greatly reduced. When teamwork is extensive, the cost of absence is substantial and the firm increases the threat of dismissal, or pays higher wages, in an effort to reduce the probability of worker absence.

2.1. A theoretical illustration

While teamwork makes monitoring of individual effort on the job more difficult, it increases the importance of monitoring absence. Consider N identical workers maximizing expected utility by choosing an absence level, a. Each worker faces a probability $m \in (0, 1)$ of being monitored. A worker monitored and found with an unexcused absence is fired. Otherwise, an absent worker receives full sick pay. Each worker maximizes

$$[1 - a + a(1 - m)]U(W) + amU(R) - C(1 - a), \quad i = 1, \ldots, N \tag{1}$$

where U is the Von Neumann-Morgenstern utility function, W is the current wage and R is the best alternative ($W > R$). The cost of effort depends on a: $C(1 - a)$ with C' and $C'' > 0$, $C(0) = 0$, $C'(0) = 0$ and $C'(1) = \infty$. The resulting interior solution, $a^* \in (0, 1)$, equalizes the expected marginal benefits and costs: $m[U(W) - U(R)] = C'(1 - a^*)$. The worker's optimal absence level is an implicit function of monitoring intensity, $a^* = a(m)$. As monitoring intensity increases, workers reduce absence: $\partial a(m)/\partial m = -[U(W) - U(R)]/C''(1 - a(m)) < 0$.

[2] This progression of research emphasizes that underlying technology (the extent of teamwork) determines the expenditures that firms make on setting and enforcing absence policies. While having a different emphasis, it remains largely consistent with the earlier view that work group norms (reflecting, in part, HRM practices) determine absence (Drago and Wooden, 1992).

[3] See Brown and Sessions (1996) for a review of these studies.