A note on non-competes, bargaining and training by firms

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Abstract

This paper analyzes how non-competes, via wage bargaining, can affect firms' incentives to provide their employees with on-the-job training. The results show that non-competes increase incentives to provide general training, but reduce those related to specific training.

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1 Introduction

Non-competes (NCs) are contractual clauses under which employees agree not to work for a firm's competitor or to establish a competing business for a defined duration after a contract is terminated, or may agree to limit their disclosure of specified information in the event they continue to work in the same industry. NCs are an increasingly common feature of employment contracts, and are used across a wide range of industries, occupations and employees.

The paradigmatic starting point for economic analysis of NCs and training by firms is Becker's (1964) seminal work on human capital, which traces the classic distinction between general and specific on-the-job training. In Becker's human capital theory there is no need for NCs. On the one hand, if training is purely general and labour markets are perfectly competitive, employees have every incentive to invest efficiently in on-the-job training since they know they can recoup their investment by quitting the current employer and going to work for any number of other firms. Thus no firms' investments have to be protected through contractual arrangements since no training investments need to be undertaken by them. On the other hand, if training is purely specific, the employer needs no protection, for the worker

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will leave the firm simply because there is no other firm to which the worker can sell his/her skills.[1]

Becker's theory has been revised and extended on numerous occasions. First, a number of papers have advanced different theoretical reasons for firm-sponsored general training, which we observe in the real world (e.g., Acemoglu and Pischke 1999). Secondly, as emphasized first by Williamson (1985), although the presence of quasi-rents, generated by specific investments, reduces the likelihood that the employment relationship will break down, it does not eliminate it; as a consequence, contractual and organizational features must be crafted with care to protect firms' specific investments.[2]

These arguments have recently given rise to a substantial literature within law and economics that discusses the merits of NCs in protecting (and, hence, motivating) training investments by firms.[3] The logic can be summarized as follows: since NCs restrict employees' alternative market opportunities, they reduce the probability that employees leave the firm after the training phase. Furthermore, by excluding that firms' investments would be used against themselves through competition, NCs also operate to protect firms when employment contracts inevitably terminate. No attention, however, has been paid to the role that such clauses can play in affecting the employer-employee bargaining process. This paper aims to fill this gap by formal analysis. This will also afford greater insights into desirability to adopt NCs according to the different nature (general or specific) of training investments.[4]

2 Model

2.1 Basic framework[5]

There are two risk-neutral parties: a firm and an employee. Time is divided into the following phases and, for simplicity, no discounting is assumed. At $t = 0$ parties sign a contract that may specify a non-compete clause nc. In particular, $nc = 1$ if the non-compete clause is included in the contract, and

[1] Efficient levels of specific on-the-job training generally require, however, that employers share the returns and the costs of investment with their employees.

[2] See, in particular, Williamson (1985, p. 243).

[3] See, e.g., Lester (2001), Long (2005) and the literature cited therein. A major point in this literature, which is almost completely legal and informal, is NCs enforceability. Legal enforceability is not central to the analysis that follows.

[4] Pure general and pure specific training represent, indeed, two polar cases and, as pointed out by Becker, actual training by firms generally falls in between. The results that follow, referring to the two extremes, need to be properly interpreted so as to include more general cases as well.

[5] The basic framework is based on MacLeod and Malcomson (1993). Kessler and Lülfesmann (2006) adopt a similar framework to analyse complementarity between employer-sponsored general and specific training (but without considering NCs).

$nc = 0$ otherwise.[6] The training phase is at $t = 1$, in which the firm makes the (non-contractible) training $\tau \geq 0$ decision. The investment monetary cost to the firm is τ. At $t = 2$ a random parameter θ is realized and it is assumed as distributed according to a continuously differentiable distribution function $F(\theta)$ over a bounded support $\left[\underline{\theta}, \overline{\theta}\right]$. The random parameter may be interpreted as shocks affecting conditions that influence the firm-employee transaction value besides their alternative market opportunities. Finally, at $t = 3$, after the training investment and the random shock are observed by both parties, the latter negotiate over a wage and, if an agreement is reached, an employment transaction is carried out, that is the firm's revenue is realized and the wage payment is made. However, during the bargaining process, both parties are also free to terminate the employment relationship, i.e. the employee may decide to quit and the firm may decide to lay the employee off and to hire another one.

Let $\sigma = (\tau, \theta) \in \Sigma$ be the state of the world in $t = 3$. For $nc \in \{0, 1\}$ and for all $\sigma \in \Sigma$, the firm's revenue at $t = 3$ is given by $r = r(\tau, \theta)$, with $r_\tau > 0$, $r_{\tau\tau} < 0$, $\lim_{\tau \to 0} r_\tau \to \infty$ and $\lim_{\tau \to \infty} r_\tau \to 0$, while alternative market opportunities for the firm and the employee are $\widetilde{\pi} = \widetilde{\pi}(\theta)$ and $\widetilde{w} = \widetilde{w}(nc, \tau, \theta)$, respectively. The following general assumptions are introduced:

Assumption 1 *For all $\sigma \in \Sigma$, $\widetilde{w}(1, \tau, \theta) \leq \widetilde{w}(0, \tau, \theta)$.*

Assumption 2 *For $nc \in \{0, 1\}$ and for all $\sigma \in \Sigma$, $r > \widetilde{w} + \widetilde{\pi}$.*

Assumption 1 states that the employee's alternative market payoff under a non-compete clause is no higher than when the clause has not been signed at $t = 0$. This clearly stems from the fact that NCs aim to restrict an employee's alternative market opportunities. Assumption 2, instead, implies that it is always beneficial for parties to trade with each other. This allows as to concentrate on the interaction between NCs and training by firm via wage bargaining alone.

The outcome of the negotiation process over $t = 3$, which takes place under fully symmetric information, is crucial for the final results. In the subsequent analysis it is assumed that negotiation can be formalized by a bargaining solution which ensures efficiency and is characterized by the *outside option principle.*[7]

[6] The initial contract may also specify an entry (probation) wage for the subsequent training period ($t = 1$). It is assumed, however, that this wage is sufficiently low not to play any role in the employment/bargaining phase at $t = 3$ (because, for instance, it is lower than the employee's disutility from work, which, without loss of generality, may be considered as normalized to zero).

[7] Several good reasons to adopt the outside option principle for the labour market are described in Malcomson (1997).

Result 1 (outside option principle) *Let $\beta \in (0,1)$ be a measure of the relative bargaining power of the employee. Then, for $nc \in \{0,1\}$ and for all $\sigma \in \Sigma$, the equilibrium ex-post payoffs π^* for the firm and w^* for the employee when employment continuation is efficient are unique and satisfy $\pi^* + w^* = r$, where*

$$\pi^*(nc,\sigma) = \begin{cases} (1-\beta)r & \text{if} \quad \widetilde{w} \leq \beta r \leq r - \widetilde{\pi} \\ r - \widetilde{w} & \text{if} \quad \beta r < \widetilde{w} \\ \widetilde{\pi} & \text{if} \quad \beta r > r - \widetilde{\pi}. \end{cases} \tag{1}$$

According to (1) parties share the surplus from continued employment according to their relative bargaining power with their alternative market alternatives (outside options) that constitute a lower bound on each party's payoff[8] but otherwise they do not affect the bargaining outcome.[9]

The firm provides training so as make its marginal expected return (profit) equal to its marginal cost (subject to the non-negativity constraint $\tau \geq 0$). Given (1), in equilibrium, the firm's optimal training τ^* must satisfy the following f.o.c.:

$$\begin{aligned} &(1-\beta)\int_{\theta:\widetilde{w}\leq\beta r\leq r-\widetilde{\pi}} r_\tau(\tau^*,\theta)dF(\theta) + \\ &+\int_{\theta:\beta r<\widetilde{w}} [r_\tau(\tau^*,\theta) - \widetilde{w}_\tau(nc,\tau^*,\theta)]dF(\theta) \leq 1, = 1 \quad \text{for } \tau^* > 0 \end{aligned} \tag{2}$$

2.2 General training

Definition 1 (general training) *Training is general when, for $nc \in \{0,1\}$ and for all $\sigma \in \Sigma$, $\widetilde{w}_\tau = r_\tau$.*

Definition 1 establishes that (pure) general training increases, at the margin, the firm's revenue and the employee's outside option exactly by the same amount. A possible representation for this case is given by $\widetilde{w}(nc,\tau,\theta) = r(\tau,\theta) - \Delta(nc,\theta)$, in which, due to the presence of search frictions and turnover costs, employee's outside option and firm's revenue simply differ by the term Δ, representing the employee's search and turnover costs (e.g., Acemoglu and Pischke 1999).

Result 2 *When contract continuation is always efficient, the firm's marginal expected return from general training with $nc = 1$ is no lower than with*

[8] Note, indeed, that $r - \widetilde{\pi}$ is the highest payoff the employee can obtain, as the firm can secure its reservation payoff $\widetilde{\pi}$ by firing the employee, while $\widetilde{w}$ is the lowest payoff the employee can obtain, the payoff to quitting unilaterally.

[9] This result may be consistent with several extensive-form bargaining games (e.g., Shaked and Sutton 1984, MacLeod and Malcomson 1995).

$nc = 0$. *Hence, NCs (weakly) increase firm's incentives to provide their employees with general training.*

Proof. Define with $\overline{\Theta}_i(nc = i, \tau) = \left\{\theta \in \left[\underline{\theta}, \overline{\theta}\right] : \widetilde{w} \leq \beta r \leq r - \widetilde{\pi}\right\}$ with $i \in \{0, 1\}$. Using the l.h.s. of (2) and taking Definition 1 for general training into account, Result 2 can be formally restated as follows:

$$(1-\beta)\int_{\theta\in\overline{\Theta}_1} r_\tau(\tau,\theta)dF(\theta) \geq (1-\beta)\int_{\theta\in\overline{\Theta}_0} r_\tau(\tau,\theta)dF(\theta), \qquad \forall\tau. \tag{3}$$

Since, from Assumption 1, $\widetilde{w}(1, \tau, \theta) \leq \widetilde{w}(0, \tau, \theta)$ for any σ, we have that $\theta \in \overline{\Theta}_0 \Rightarrow \theta \in \overline{\Theta}_1 \Leftrightarrow \overline{\Theta}_0 \supseteq \overline{\Theta}_1$, which together with $(1 - \beta) > 0$ and $r_\tau(\tau, \theta) > 0$ implies (3). Also note that the inequality in (3) is strict whenever $\widetilde{w}(1, \tau, \theta) < \widetilde{w}(0, \tau, \theta)$ and $\overline{\Theta}_1 - \overline{\Theta}_0 \neq \emptyset$. ■

2.3 Specific training

Definition 2 (specific training) *Training is specific when, for $nc \in \{0, 1\}$ and for all $\sigma \in \Sigma$, $\widetilde{w}_\tau = 0$.*

Definition 2 states that training is (purely) specific when it does not affect the employee's outside option at all.

Result 3 *When contract continuation is always efficient, the firm's marginal expected return from specific training when $nc = 1$ is no higher than when $nc = 0$. Hence, NCs (weakly) decrease firm's incentives to provide their employees with specific training.*

Proof. Also define with $\underline{\Theta}_i(nc = i, \tau) = \left\{\theta \in \left[\underline{\theta}, \overline{\theta}\right] : \beta r < \widetilde{w}\right\}$ with $i \in \{0, 1\}$. Using the l.h.s. of (2) and taking Definition 2 for specific training into account, Result 3 can be formally restated as follows:

$$\begin{aligned}(1-\beta)\int_{\theta\in\overline{\Theta}_0} r_\tau(\tau,\theta)dF(\theta) + \int_{\theta\in\underline{\Theta}_0} r_\tau(\tau,\theta)dF(\theta) \geq \\ (1-\beta)\int_{\theta\in\overline{\Theta}_1} r_\tau(\tau,\theta)dF(\theta) + \int_{\theta\in\underline{\Theta}_1} r_\tau(\tau,\theta)dF(\theta), \qquad \forall\tau.\end{aligned} \tag{4}$$

Since $(1 - \beta) < 1$ and $\overline{\Theta}_0 \cup \underline{\Theta}_0 = \overline{\Theta}_1 \cup \underline{\Theta}_1 = \left\{\theta \in \left[\underline{\theta}, \overline{\theta}\right] : \beta r \leq r - \widetilde{\pi}\right\}$ (which does not depend on nc), condition (4) is satisfied iff (3) holds; thus the proof goes on as for Result 2. ■

3 Concluding remarks

In this paper it has been analysed how NCs can affect, via wage bargaining, firms' incentives to provide their employees with (general and specific) on-the-job training. In this regard, the results show that NCs increase the firm's incentives to provide general training, but reduce those related to specific training. The logic behind these results can be summarized as follows: non-competes, by restricting the employee's alternative market opportunities, reduce, *ceteris paribus*, the probability of the employee's outside option being binding in bargaining equilibrium and, conversely, increase that of surplus-sharing occurring. But the firm always captures only a fraction of the marginal return on its training investment when surplus-sharing applies. By contrast, when the employee's outside option is binding, the firm obtains no marginal return from investing when training is general and the full marginal return when training is specific.

Obviously, such results must be measured against previous findings concerning the effects of NCs on employment contract continuation. In this regard, while our results reinforce the supporting arguments for NCs in relation to employer-provided general training, they conflict with those concerning employer-provided specific training. As a consequence, the overall effect of NCs can be to reduce a firm's incentives to supply specific training, when the negative effect, operating via bargaining, outweighs the positive one, acting on employment continuation. This is highly likely to occur especially if specific investments *in se* greatly reduce the probability of parties separating, whereby the role of NCs becomes negligible.

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