Training and Job Separation in Imperfect Labor Markets: The Case of Non-Compete Agreements

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January 21, 2023

Abstract

Non-compete agreements are provisions within employment contracts that prevent workers from joining competing firms. They are prevalent in the US workforce, with 38% of workers having signed such clauses at some point in their careers. Despite their vast usage, there is limited research on the incentives for workers and firms to use non-compete agreements. We show that non-compete agreements can create one market failure – inefficient lack of job separation – while mitigating a separate market failure – inefficient provision of industry-specific investment by firms. The model yields the predictions that (i) non-compete agreements are more likely to be used in industries where employer training is more "general" (ii) non-compete signers have longer job tenures, and (iii) non-compete signers receive more firm-provided investment. Using newly released panel data on the usage of non-compete agreements from the NLSY97, we confirm the model's predictions. Non-compete signers are more concentrated in knowledge-intensive industries and remain with their employers for 3 more months than individuals without such agreements. Non-compete signers also receive more employer-provided investment, but do not experience higher wage growth.

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The theory that labor markets are perfectly competitive has come under scrutiny in recent decades (e.g. Card 2022; Naidu and Posner 2021). Non-compete agreements – provisions within employment contracts that prevent workers from joining competing firms – are often discussed as a factor that provides firms with wage-setting power. According to survey estimates, they are prevalent in the US workforce, with 38% of workers having signed non-compete agreements at some point in their careers (Starr, Prescott, and Bishara 2021). Despite their vast usage, there remains much controversy surrounding whether non-compete agreements enhance the efficiency of the labor market.[1]

Proponents of non-compete agreements argue that they increase worker retention and encourage firms to develop the industry-specific skills of their workforce.[2] The productivity gains from such investment may be shared with labor, thus increasing wage growth in the long-run. Opponents state that non-compete agreements lock workers into their jobs, creating mobility frictions that prevent workers from joining firms where they would be more productive.[3] Reduced labor market competition due to non-compete agreements allows firms to retain labor at lower wages, thus decreasing wage growth.

In this paper, we develop a theoretical model to show how non-compete agreements can create one market failure – inefficient lack of job separation – while mitigating a separate market failure – inefficient provision of (non-contractible) industry-specific investment by firms. The worker and firm's choice then of whether to include a non-compete agreement balances these two considerations. The parties sign a non-compete agreement if the productivity gains from the firm's investment outweigh the expected costs of inefficient separation.

To illustrate this trade-off, our model features two periods. In the first period ("ex-ante"), a

[1]This controversy is recently reflected by the Federal Trade Commission's proposal to ban the enforcement of non-compete agreements in the United States.

[2]In perfectly competitive labor markets, firms do not profit from providing general (or, for that matter, industry-specific) skills (Becker 1962). If they were to increase the productivity of the worker by a given amount (say δ), they would need to increase compensation by δ in order to retain the worker.

[3]Critics also cite that non-compete agreements may deter business formation, as new businesses would struggle to poach workers bound under such an agreement (i.e. Aghion and Bolton 1987). In addition, firms may impose non-compete agreements upon workers who are not aware the provision is part of the employment contract, thereby allowing firms to exploit labor in the form of worse wages and working conditions.

single worker W and firm F choose a contract, which consists of a wage w and may include a non-compete agreement $\delta \in \{0,1\}$.[4] The non-compete agreement prevents W from moving to poaching firms θ within the same industry as F. Between the first and second period, F sinks non-contractible industry-specific investments i at unit marginal cost that raise W's productivity within F by r, should trade between the parties occur. At the time the investment is made, it is uncertain how much F's investment raises W's productivity if separation occurs. At the beginning of period 2, overall market conditions v are revealed and a poaching firm $\theta \in \{0,1\}$ makes an offer to W. With probability q, the poaching firm is in the same industry as the original firm $(\theta = 1)$ and values the worker at $v + \rho \times i$. With remaining probability, the poaching firm is outside of the original firm's industry $(\theta = 0)$ and values the worker at v.[5] Observe that F's investment raises W's productivity among poaching firms only when $\theta = 1$. We assume the labor market is competitive ex-post, so the poaching firm makes an offer equal to its valuation.[6] As in Hashimoto (1981), we further assume that the poaching firm's offer is private information to the worker. After the worker receives his outside offer, the parties can trade at the contractual terms or separate.[7]

First, consider what happens if the parties do not include a non-compete agreement in the contract. To simplify matters, suppose that the poaching firm is always an industry competitor $(q = 1)$. At the investment stage, the firm chooses investment to equate marginal cost and expected marginal benefits. It earns a return of r when trade occurs, but does not earn a private return when separation occurs even though such investment would raise W's productivity by ρ. Anticipating this, F underinvests, which is the well-known hold-up problem.

One solution to the hold-up problem is for W and F to write a contract that reduces the chance that job separation occurs (i.e. Autor 2003; MacLeod and Malcomson 1993). A binding non-compete agreement fits this bill, as W is less likely to quit when $\delta = 1$ than when $\delta = 0$, holding

[4]The parties also have the option of making side payments to each other at the contracting stage. Let B denote the side-payment made by W to F at the contracting stage. Note that the wage may also depend on whether the non-compete agreement is included in the contract.

[5]Note that if $q = 1$ and $\rho = r$, the investment is completely general.

[6]A similar assumption is made in Spier and Whinston (1995), pg 186-188

[7]Since trade is voluntary, W can quit or F can fire. The firm's payoff from trade (net of investment) is $ri - w$, while the worker's is $w - ri$. The firm's payoff from separation is 0. The worker's payoff from separation is $\bar{w} = v + \big(\theta(1-\delta)\big)\rho \times i$. F fires the worker if $w > ri$, and W quits if $w < \bar{w}$.

all else equal. The non-compete agreement thus encourages F to invest more but prevents W from joining the industry competitor, even when such separation is socially efficient.[8]

While existing literature has documented that non-compete agreements may resolve the hold-up problem (i.e. Meccheri 2009), we contribute by showing that non-compete agreements also prevent efficient ex-post matching between workers and firms. Many economists adopt the principle that contract renegotiation is costless, in which case firms may be willing to release workers from non-compete agreements in exchange for an appropriately sized buyout payment (i.e. Shi et al. 2021; Posner, Triantis, and Triantis 2004). When job separation is socially efficient, the third party would be willing to fund such a buyout payment, thus restoring the efficient matching between workers and firms.[9] In contrast, we follow Hashimoto (1981) in assuming that workers have private information about their outside options, and that this information cannot be credibly communicated to firms.[10] The large transaction costs associated with contracting on the worker's outside option makes renegotiation prohibitively costly, preventing efficient matches between workers and third parties from becoming realized.[11]

We believe the theory has an intuitive appeal in understanding the costs and benefits generated by mobility frictions, though we are not the first to show that contracting affects ex-ante investment decisions or the efficiency of ex-post separation decisions. For instance, Grossman and Hart (1986) show that contracting parties may allocate authority rights at the contracting phase to encourage the provision of non-contractible investments by the more productive party. MacLeod and Malcomson (1993) demonstrate that fixed-wage contracts that require the mutual consent of both parties for renegotiation encourage firms to provide the efficient level of relationship-specific investments. Acemoglu and Pischke (1999) show that when mobility frictions increase in a worker's skill, firms

[8]This occurs when $ri \geq w \geq v$ and $\rho \times i > 0$

[9]Workers who are not wealth constrained may also independently fund the buyout payment. More generally, when matching with the third party is socially efficient and the parties are not wealth constrained, the buyout payment offered to the incumbent firm may be split arbitrarily between the worker and the third party. This is nothing other than a restatement of the Coase Theorem.

[10]This assumption may be contested. For example, Chiappori and Salanie (2000) find no evidence of asymmetric information in the French market for automobile insurance.

[11]If the parties do not have the ability to renegotiate the initial contract, there may also be inefficient separations, as in Hashimoto (1981). Our decision to prevent parties from renegotiating the contract also follows Hart and Moore (2007), who urge scholars to develop models with ex-post inefficiencies.

are incentivized to provide general training. Pakes and Nitzan (1983) develop a model where a flat first period wage and a state-contingent second period wage can yield efficient ex-ante and ex-post matching, though they do not consider how contracting affects investment incentives.

We contribute to the literature by showing that mobility frictions such as non-compete agreements can be a double-edged sword – they encourage firms to provide investment they otherwise would not have sunk while preventing efficient job separation. More generally, our model sheds insight into how market and workplace structure influences the employer's incentives to provide "general" training (e.g. Acemoglu and Pischke 1999; Lynch and Black 1998). Our results further imply that blanket bans on the enforcement of non-compete agreements may have short-term gains as workers flow into jobs in which they are more productive, but may have long-term consequences in terms of a less-skilled workforce.

Our model predicts that non-compete signers are concentrated in industries where skills are easily transferable, have longer job tenures, and are more likely to receive employer-provided training. These predictions can be tested using newly released panel data on non-compete usage from the National Longitudinal Survey of Youth. The survey follows a variety of outcomes for individuals who were teenagers in 1997, though the first year the survey tracks non-compete status is 2017, when the sample is aged 32 - 38. Of the 4441 working respondents, 632 (14%) reported having a non-compete agreement in their contract.[12]

Several descriptive statistics support the model's predictions. Individuals who sign non-compete agreements are 5 percentage points more likely to receive formal training run by the employer than those who do not sign such agreements, and the difference is statistically significant at the 1 percent level. This result is consistent with Starr (2019), who finds that increased state-level enforcement of non-compete agreement raises firm sponsored training. Non-compete signers are more likely to work in knowledge-intensive industries such Professional Services than in industries requiring more routine work, such as Construction.[13] They also have longer tenures with their employers.

[12] Slightly above 90% of respondents are "Very Confident" in their answer.

[13] 24% of respondents working in Professional Services reported having a non-compete agreement, while 11% of respondents in Construction reported having a non-compete agreement.

The respondents who indicated signing a non-compete agreement in 2017 had a mean job tenure of 5.2 years, compared to 5 years among those who do not have non-compete agreements. Despite the fact that non-compete signers receive more on the job training, they do not experience higher wage growth. Between 2017 and 2019, nominal wages of non-compete signers increased by 2.8% compared to 2.5% for those without non-compete agreements. The difference is not statistically significant at conventional levels, which suggests that employers are not sharing the rents generated from increased investment with labor.

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