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Alternatives to Paying Efficiency Wages: Why No PEOPLEFAX?

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Abstract
Efficiency wage theories of unemployment predict that employers will pay employees above market-clearing wages to deter shirking by workers. However, paying supernormal wages may not be the only solution to this problem. When the Montgolfier Paper Mill encountered shirking and laborers who "left their employ[ers] when they tried to discipline them" (Horn, p. 37) in the 1780s, they instead made reforms, the most significant of which was the *certificat de congé*, a "record of [each employee's] previous employment and conduct" (Rosenband 1993, p. 233) maintained by the employer. Under this system, the Montgolfiers could pay normal market wages and still cause their workers to incur penalties for shirking. Legislative barriers in several modern jurisdictions prevent employers from giving detailed feedback on past employees to potential employers.

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I. Introduction

The existence of persistent involuntary unemployment is often counted among the most puzzling phenomena in all of economics, and it is one with dire consequences for human welfare. While macroeconomics analyzes changes in the level of employment as a consequence of fluctuations in aggregate demand, a field of microeconomic analysis purports to explain the failure of labor markets to clear regardless of cyclical fluctuations. These microeconomic theories, known as efficiency wage theories, hold that firms set wages above the market-clearing level because wages affect the quality of labor available to the firm.

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But how prevalent are the problems that efficiency wages supposedly solve in a competitive labor market? Is paying supernormal wages the optimal solution to these problems, or could entrepreneurs find another solution without the unfortunate side effect of persistent involuntary unemployment? Following the advice of Raff and Summers (1986, p. 3), it may be fruitful to answer these questions using "a qualitative approach to a specific, narrowly defined episode . . . given the general difficulties involved in econometrically testing these theories." After a brief summation of one common theory of efficiency wages, this paper will discuss historical responses to costly monitoring of workers by firms, with a focus on papermaking in late eighteenth-century France.

II. Efficiency Wage Theory

Weiss (1991) separates theories of efficiency wages into two categories, one "concerned with the sorting effects of wages, more generally wage schedules, in an economy where workers have information about their own productivity that is not available to firms," and the other "concerned with the direct effects of wages and wage schedules on the performance of workers" (p. vii). This paper will focus on the latter category, canonized by Shapiro and Stiglitz's (1984) model, where "the worst that can happen to a worker who shirks on the job is that he can be fired. Since he can immediately be rehired, however, he pays no penalty for his misdemeanor . . . to induce the worker not to shirk, the firm attempts to pay more than the 'going wage'; then, if a worker is caught shirking and is fired, he will pay a penalty" (p. 433). Shapiro and Stiglitz demonstrate the following model, modified here for simplicity's sake to include workers who don't discount the future:

$$Ve,\ N = \frac{w - e + bVu}{b}$$

$$Ve,\ S = \frac{w + (q + b)Vu}{q + b}$$

In the model, $V_{e,N}$ and $V_{e,S}$ are the expected utility for nonshirkers and shirkers, respectively; *w* is employee wages; *e* is the disutility of effort expended working; *b* is the probability of losing one's job for reasons unrelated to performance; V_u is the expected utility of unemployment; and *q* is the probability of being caught and fired for shirking. A worker will choose to be diligent when $V_{e,S} < V_{e,N}$, which Shapiro and Stiglitz term the "no-shirking condition," derived in this simplified model as:

$$wb + b(q + b)Vu < (q + b)w - (q + b)e + b(q + b)Vu$$

$$wb < wq + wb - qe - be$$

$$b + q(e) < wb$$

$$1 + \frac{q}{b}(e) < w$$

Even in this simplified model, workers must be paid proportional to their disutility of labor in order to be induced not to shirk, since the firm can only adjust *w*. If firms all choose to pay supernormal wages to deter shirking, the result is a persistent surplus of labor: unemployment.

III. The Case of the Montgolfier Paper Mill

Safley and Rosenband (1993) present the case study of the Montgolfier Paper Mill in the 1780s, which possessed an organizational environment that would seem to match the model described by efficiency wage theorists. A competitive labor market meant that workers who were fired for shirking could easily find another job paying their marginal productivity of labor, such that "substantial labor turnover was the rule at Vidalon-Le-Haut and in the skilled crafts of Old Regime France in general" (p. 238).[1] Shirking was clearly an issue for the employees, as "irregular effort . . . [caused] employment [to be] unstable and attendance [to be] unpredictable . . . output fluctuated from season to season, week to week, day to day" (p. 435).

Horn (2015) similarly describes the labor market in Old Regime France as one mired by shirking costs and high turnover, where firms "acknowledged that skilled laborers frequently left their employ when they tried to discipline them, forcing the city's masters to poach workers from one another" (p. 37). The market for papermakers in eighteenth-century France fits efficiency wage models even better than popular historical examples of the narrative.

Rosenband notes that the Montgolfiers responded to the shirking problem by being one of the first workplaces to adapt modern mainstays of worker discipline. They established a system that "bore a surprisingly close resemblance to labor as we know it today, with

[1] Vidalon-Le-Haut was the village where the Montgolfier Paper Mill resided.

workers reporting for a set number of hours per day and a set number of days per week, celebrating a small number of holidays, and producing at a regular rate" (2000, p. 443). Roser (2016) concurs, writing that "overall, the Montgolfier mills were probably the first manufacturing operations with labor relations similar to our modern factories . . . this was groundbreaking for the time" (chap. 7.6). However, one of the few policies that aided the Montgolfiers that is *not* a common feature of modern workplaces provided a novel solution to the same problems that efficiency wages are purported to solve.

French government officials in the eighteenth century took issue with "the ease with which seditious paperworkers quit their bosses and found employment in other mills," a concern which continues to fit the narrative described by Shapiro and Stiglitz (p. 233). Their solution, which the Montgolfiers embraced, was the *certificat de congé,* a "record of previous employment and conduct" (p. 233). Mainly as a means to deter vagrancy and wanderlust, the French state had since 1671 "barred papermakers from engaging any wandering hand unless he could produce a written certificate of dismissal.," But, Rosenband notes that "generally . . . paperworkers could obtain a wage and lodging without written references." Rather than its original purpose, by the 1780s the *certificat de congé* served not only as a means for the Montgolfiers to screen incoming workers, but also as a way to deter shirking.

"When a worker left Vidalon-Le-Haut," Rosenband writes, "they updated the worker's *certificat de congé* . . . appraised his attitudes and skills, and indicated under what circumstances he should be rehired" (p. 235). For example, one worker, François Millot, left Vidalon-le-Haut with a *certificat de congé* that "affirm[ed] his skill at the vat . . . but warn[ed] that he was unable 'to submit to the rules of the house' and had struck a fellow worker" (p. 236).

The results of adapting the *certificat de congé* achieved nearly the same desired effects as paying efficiency wages. Rosenband writes, "It is possible to identify forty-three paperworkers and foreman and work in Vidalon-le-Haut in April 1784. Thirty-four of these men were trained by the Montgolfiers from 1780 through 1784. During the 1780s, 55.9 percent (nineteen of thirty-four) of these hands spent five years or more at Vidalon-le-Haut. At the end of the decade, ten of them still labored there. Such persistence was not unheard of during the close of the Old Regime . . . nevertheless, the stability of the workers at Vidalon-le-Haut was unusual . . . Vidalon's master secured a stable core of homegrown paperworkers, and even a few persistent journeymen" (pp. 237–38).

Unlike the solution of paying efficiency wages, however, relying on other means of deterring workers from shirking in competitive labor markets did not create additional involuntary unemployment among paperworkers. Roser notes that "while the break with the traditional system, at first glance, looks like the workers losing to the masters, this is not entirely the case. Working at the Montgolfier mills was actually very popular" (chap. 7.6).

Although *certificats de congé* were a government program, a closer examination gives pause to the idea that such a system would not have soon emerged under laissez-faire. Minard (2002) notes in his review of Rosenband that "we know that the Royal legislation has hardly succeeded in imposing [*certificats de congé*] elsewhere" (p. 230). This would imply that, during the time of the Montgolfiers' experiment, other labor markets were not yet competitive enough to experience problems associated with high shirking costs, making both efficiency wages and permanent records unnecessary tools for employers in other sectors.

IV. Similar Mechanisms

While other episodes in labor history have involved the use of employer-maintained permanent records, there are few other accounts of their effects on individual firms' productivity and turnover, and they often have key differences with the Montgolfiers' system. The French *livret d'ouvrier* was a booklet containing identification and a list of employers, but it was held by the employer to deter vagrancy. More important, as Dupiney de Vorepierre (1858) noted in his encyclopedic dictionary, the *livret d'ouvrier* was not used to keep track of an employee's conduct. "When the worker comes to leave the workshop, he [presents] his libretto to the employer, who enters there the date of his exit," he writes, "[but] the boss can not make any annotation favorable or unfavorable to the worker" (p. 310).

The Danish *skudsmaalsbog* also resembles the *certificat de congé,* as it was used to record the employment history of domestic servants. Friis (2011) writes that "the *skudsmaalsbog* . . . was mandatory in Denmark in 1833–1921 . . . [and] contained information about birth, parents, baptism, schooling, confirmation, and then endorsements by employers." However, "in 1867 it was forbidden to write [comments on] behavior and abilities" (p. 1). Like the *livret d'ouvrier*, it seems that the *skudsmaalsbog* was used more to prevent vagrancy than to allow employers to share information about previous employees, seeing as this function of the *skudsmaalsbog* was terminated in 1867. The less vertically integrated nature of the market for domestic servants also makes it more difficult to gauge the effects of *skudsmaalsbog* on shirking.

V. Application to Efficiency Wage Theory

It's quite intuitive to understand the mechanism by which a system of permanent records for employees might have reduced shirking without the need to raise wages. Workers in a market with imperfect monitoring have the ability to occupy two distinct personae: one of a conscientious and productive worker ("Dr. Jekyll") and the other an opportunistic shirker ("Mr. Hyde"). When looking for a job, or when a monitor is watching, the worker can play the role of Dr. Jekyll convincingly, but can quickly slink into Hyde personality when authorities aren't looking.

What relying on permanent records does for employers is allow them to label their employees as either Jekylls or Hydes, ruining their ability to flip between the two personalities as they please. We can demonstrate this difference by modifying the simplified efficiency wage model presented above to account for differences in unemployment experiences between shirkers and nonshirkers:

$$Ve,\ N\ =\ \frac{w\ -\ e\ +\ bVu,\ N}{b}$$

$$Ve,\ S\ = \frac{w\ +\ qVu,\ S\ +\ bVu,\ N}{b+q}$$

In these models, $V_{u,N}$ is the expected utility of unemployment of a nonshirker, and $V_{u,S}$ is the expected utility of unemployment of a shirker. The no-shirking condition, where $V_{e,S} < V_{e,N}$, becomes:

$$\frac{w + qVu,\ S\ +\ bVu,\ N}{b+q} < \frac{w\ -\ e\ +\ bVu,\ N}{b}$$

$$\begin{aligned} bw\ +\ bqVu,\ S\ +\ b2Vu,\ N & \\ & < bw\ +\ qw\ -\ eb\ -\ ew\ +\ b2Vu,\ N \\ & +\ bqVu,\ N \end{aligned}$$

$$bq(Vu,\ S\ -\ Vu,\ N)\ <\ w(q\ -\ e)\ -\ eb$$

$$(Vu,\ S\ -\ Vu,\ N)\ <\ \frac{w(q\ -\ e)\ -\ eb}{bq}$$

$$(Vu,\ N\ -\ Vu,\ S)\ >\ \frac{be}{bq} - \frac{wq}{bq} + \frac{we}{bq}$$

$$(Vu,\ N\ -\ Vu,\ S) * = \frac{e}{q} - \frac{w}{q} + \frac{we}{bq}$$

Unlike the earlier example, the employer can set both *w* and $V_{u,S}$. Note that the no-shirking condition can be fulfilled if the punishment in the labor market after being branded a shirker on one's *certificat de congé*, or ($V_{u,N} - V_{u,S}$), is sufficiently high for *any* given wage level. In other words, so long as a bad reference from a prior employer makes unemployment sufficiently longer, and thus more unpleasant, for a shirker than a nonshirker, firms can pay market-clearing wages and still induce their workers not to shirk.

Further analysis indicates that the minimum level of punishment necessary to deter shirking (($V_{u,N} - V_{u,S}$)*) is decreasing in *q*:

$$\frac{\partial(Vu,\ N\ -\ Vu,\ S) *}{\partial q}\ =\ -(\frac{e}{q^2}\ +\ \frac{we}{bq^2})$$

This makes sense. When assessing potential hires, businesses would need to incorporate *q* into their calculus regarding whether or not to hire a worker. If a worker's previous employer notes on a permanent record that they caught a worker shirking a moderate amount during his or her tenure, such an observation could either frame the worker as usually devoted at a high *q*, or as prone to shirking as the worst Hydes at a low *q*.

Employers could easily adapt to a given *q*, however, by adjusting the penalty for any given level of reported shirking. Employers in a low *q* world would be wary of hiring a potential employee who was only caught shirking once. But, in a high *q* world, they might be impressed by that worker's diligence. This theoretical adaptation by firms to varying *q*s closely mirrors adaptations to varying probabilities of observing criminal behavior in the literature on the economics of crime, such as the works of Gary Becker (1974).

Because workers who are capable of backwards induction and aware of the permanent record policy will never shirk in the first place, the benefits of permanent records are mostly internalized to the firm as a deterrent to workers. However, the act of actually updating them when a worker leaves or is fired may have positive externalities. The worker's future employers, not the employer the worker is parting ways with, reap the benefits of an accurate record of that worker's infractions.

Reputational mechanisms could provide enough incentive to motivate larger employers to provide accurate information about departing workers, rather than labeling them all as "Mr. Hydes." After all, if a black mark from an employer becomes untrustworthy, then it is no longer a barrier to a fired worker finding another job at his or her level of marginal productivity. Employers, then, must either have a reputation for being truthful unless they want to deal with shirking costs or return to paying efficiency wages.

Concerns about firms using permanent records to wrest a degree of monopsony power from workers can be assuaged both theoretically and empirically. First, one should keep in mind that efficiency wage theories presuppose that the labor market is competitive. Intersecting with the analysis above, firms that develop a reputation for sabotaging outgoing workers with slanderous reviews would have trouble attracting employees, who have multitudinous other options. If a firm already has monopsony power, it need not bother paying efficiency wages *nor* updating workers' permanent records.

One case from Rosenband's research seems to support this view. After stealing firewood from his employers, "Louis Pichat lost his job . . . with that settled, the Montgolfiers noted that they would not block any manufacturer who chose to provide Pichat with work" (p. 235). If materials theft was not enough to earn a dishonest review from the Montgolfiers, it's difficult to believe that mere shirking would be.

VI. Why Is There No PEOPLEFAX?

At first glance, the role that *certificats de congé* played in the examined microcosm of the eighteenth-century French labor market may not seem especially unique. After all, resumes and references are almost ubiquitous in the modern-day job-searching process. Both allow a prospective employer to get feedback on an employee from past employers. However, the legal and cultural barriers to verifying resumes and references from previous employers in today's modern economy incentivize employers to act cautiously at best and silent at worst when describing fired employees. However, resumes and references are poor substitutes for a system like *certificats de congé* in modern labor markets, where legal and cultural barriers incentivize employers to omit or downplay critical information when describing former employees.

Laws in the United States, for example, range from those of New Mexico, where employers are protected from legal action if they "give an accurate report or honest opinion of the qualifications and the performance of a former employee" (N.M. Stat. Ann. § 30-13-3), to laws like Kansas's, which prohibit employers from "prevent[ing] or attempting to prevent by word, sign, or writing of any kind whatsoever any discharged employee from obtaining employment from any other person" (Kan. Stat. Ann. § § 44-117 to 44-119). While many states have attempted to curb the effects of these laws by passing "job reference immunity statutes" (JRIS), which "immunize employers from liability arising out of job references . . . [and] encourage employers to provide references, based on the expectation that qualified immunity in reference-based lawsuits will reduce employers' fears of being sued," legal scholars such as Cooper (2001) have found that "current reference immunity statutes are of little use in encouraging employers to provide references" (p. 6). Cooper primarily attributes the ineffectiveness of such immunity legislation to conflicts between the statutes and common law, under which "reference claims may still be adjudicated," in addition to employers' lack of knowledge of these statutes' existence (p. 7). More recent research from Elder and Gerdes (2007) confirms that "there is no conclusive evidence to date that JRIS have influenced any significant change in a firm's willingness to provide reference information" (p. 25).

Legal barriers aside, shifts in cultural attitudes regarding employer/employee relations could explain why more employer openness regarding employee conduct and performance has not been used to address shirking concerns. A large body of literature indicates that employers harbor altruistic, or even paternalistic, attitudes toward their employees. In his collection of interviews with employers, labor leaders, and managers, Beweley (1999) finds that employers often openly compare their employees to children and are reluctant to cut nominal wages for fear of hurting morale. Segalla et al. (2001) find that only about half of surveyed employers choose to fire highly paid or underperforming workers in hypothetical scenarios, the rest instead choosing to fire highly preforming but older employees: "The older employee is 'given a gift' as some French respondents put it. He no longer must trudge into the office and work but retains a large part of his salary. *No hard decision must be* *made which would attack the sense of self-worth of someone* who was being fired because he was no longer sufficiently productive" (p. 63, emphasis mine).

Emblematic of the psychological difficulty of slighting one's employees is the concept of "dehiring," wherein employers help underperforming employees find employment at other firms rather than simply letting them go. Caplan (2013) notes that "dehiring has two main advantages over firing. First, it is legally safer. Employees who leave of their own volition to take another position are far less likely to sue you than employees you kick to the curb. Second, it is psychologically easier. When a firm fires a worker, his boss and co-workers feel sorry for him. When a firm dehires a worker, his boss and co-workers feel happy for themselves!"

Rosenband notes that such employer paternalism was not as decisive a factor at the Montgolfier Paper Mill: "The paternalistic tradition that Pierre [Montgolfier] passed to his children was tough-minded and clear-eyed, as carefully calculated as wage incentives or the coucher's daily responsibilities. It was a matter of exchanges, a sort of transaction, however unequal, between manufacturers and the skilled, or those just mastering the trade" (p. 88). The same sentiments that contribute to a preference for "dehiring" over termination likely also limit the ability for employers to use a system of communication about employee quality similar to that of the *certificat de congé*.

Given that increased transparency about the quality of one's employees carries with it legal risks and a psychological burden, there does exist one other alternative to the problem of shirking in a competitive labor market: noncompete agreements. If employees are legally barred from seeking employment at competing firms, then employees who are sacked for shirking incur losses when they must seek employment in a different industry. There are, however, reasons to doubt that noncompetes would be nearly as effective as a permanent record system, or even an increased allowance for employers to evaluate previous employees. First, noncompete agreements are often accompanied by higher wages for their signatories, which leads back to the initial inefficiencies created by efficiency wages. Starr et al. (2019) concluded that: "when workers are presented with noncompetes *after* accepting the job, they experience no wage or training benefits relative to an unconstrained individual, are less satisfied in their job, and have almost a year longer tenure. In contrast, workers presented with a noncompete *before* accepting the job appear to be better off: Relative to an unbound worker, they have 9.7% higher wages (which occur in the first few years of tenure), receive 11% more training, and are 6.6% more satisfied in their job than those who are not bound by noncompetes" (Starr 2019, p. 5).

Of course, if use of noncompetes is motivated by concerns beyond shirking costs- such as ensuring that firms capture the value of on-the-job training or allowing employees to be entrusted with proprietary information, then they need not result in increased involuntary employment like efficiency wages do. However, the fact that workers seem to require a compensating differential in exchange for a limitation of their future job prospects casts doubt on the idea that noncompetes fare any better than efficiency wages in addressing the specific problem of employee shirking. Beyond their tendency to result in increased wages for bound employees, noncompete agreements also face legal restraints on their use, with states like California, Montana, and Oklahoma prohibiting their use entirely.

VII. Conclusion

One can draw several important conclusions from the above examination of the labor market policy of the Montgolfiers.

First, the difficulties faced by employers in a competitive labor market, where employees can easily find alternative employment at the marginal productivity and thus shirk, are pervasive and were noted by both employers and governments almost as soon as the necessary conditions were met.

Second, while paying workers above their marginal productivity is one possible solution to the problem of shirking costs, it is not the only solution. Shortly after the problem reared its head, entrepreneurs utilized an alternative solution: a mandated permanent record of individual employees' conduct, or the *certificat de congé*.

Third, while a similar regime would function differently in a more heterogeneous modern labor market, firms could easily discount for distortionary factors such as variability in truthfulness and probability of catching shirkers. Finally, several legal and legislative barriers in the United States prevent firms from instituting a similar program for their workers. These polices, combined with the psychological and sociological difficulties associated with "doing wrong" by one's employees, may raise the level of involuntary unemployment in their jurisdictions.

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