

Organizational Design and Technology Choice under Intrafirm Bargaining: Reply

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Catherine C. de Fontenay and Joshua S. Gans (2003) provide an interesting and insightful extension to our theory of intrafirm bargaining between workers and a firm, by introducing a pool of ready-to-employ workers that a firm can freely draw upon at any time.

In our prior work on intrafirm bargaining (Stole and Zwiebel, 1996a, b), we developed a general multiperson bargaining framework in order to analyze how workers' rents depend upon their marginal products and their *infra-marginal* products. In this setting, the firm first chooses the number of employees to hire, and then negotiates wages with each of them in a series of bilateral meetings. Because the firm cannot hire additional workers once negotiations have begun, workers are temporarily irreplaceable and possess hold-up power in these negotiations. In equilibrium, employee wages are uniquely determined by the requirement that neither the firm nor any individual worker can benefit from bilateral renegotiation, taking into account the parties' respective bargaining power and the disagreement point. We assume that following a breakdown in any bilateral meeting, the worker permanently separates from the firm and the firm renegotiates wages with all remaining employees. Among other results, we demonstrate in this setting that the firm will want to overemploy workers; i.e., choose an employment level at which the worker's outside reservation wage exceeds each worker's marginal product in the firm. The logic for this is simple: in our setting, a worker produces both a direct marginal product for the firm through his contribution to output and also an indirect benefit in depressing the wages of other workers (by lessening the impact of their threats to quit). This added bargaining benefit gives the

firm a reason to hire workers beyond the point where their direct marginal product equals the reservation wage.

In their paper, de Fontenay and Gans reconsider this bargaining setting by introducing an outside pool of identically productive employees, any of whom can be immediately brought inside the firm to produce if negotiations with a current worker break down. Most interesting of their results, de Fontenay and Gans find that such an external pool generates underemployment rather than overemployment. The intuition for this is explained quite clearly in their paper. Since outside replacement workers can be brought into the firm immediately and are productively equivalent with internal employees, they confer the same bargaining benefits as workers who are hired and brought inside the firm—either way they can serve to replace a quitting worker. There is no longer a bargaining benefit to overemployment. Moreover, if the external pool is finite, employees will still exercise some hold-up power over the firm and capture rents because an employee separation brings the firm closer to running out of replacement workers. Given that employees receive wages that exceed their reservation wage, the firm will actually underhire relative to a neoclassical (nonbargaining firm) that equates marginal output with this reservation wage.

This main point of de Fontenay and Gans' work is insightful and illuminates a critical assumption for our overemployment result: namely, that employees are, at least partially and temporarily, irreplaceable. In contrast, in de Fontenay and Gans, firms have access to a ready-to-employ perfectly substitutable labor pool outside the firm. This distinction is important both for an obvious reason and a subtle one. The obvious reason is, of course, that if replacement employees are inside the firm, they must be paid a wage, while the de Fontenay-Gans pool of replacement employees are not paid by the firm. Viewed in this manner, our overem-

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ployment result can be thought of as a case of the firm overemploying labor in order to generate an *internal* labor pool; de Fontenay and Gans consider settings in which this pool is external and free so there is no need to overemploy.

Additionally, though somewhat more subtle, implicit in the analysis of de Fontenay and Gans is a presumption that employment alters the manner in which an employee can bargain with a firm. In particular, note that in de Fontenay and Gans, workers provide a bargaining benefit to the firm whether inside or outside the firm. However, it is only the former that are allowed to negotiate with the firm and capture a fraction of this surplus they confer. In particular, employees capture bargaining surplus by virtue of the fact that if their negotiations with the firm "break down," they are permanently separated from the firm. However, outside replacement workers are not given the same opportunity to negotiate with the firm under the threat of permanent breakdown.

The key question in terms of application is, in practice, how often do firms have ready-to-employ, perfectly substitutable replacement workers? The answer is perhaps "quite often" when untrained or low-skilled employees are involved. However, for such employees, bilateral wage negotiations with the firm seem less plausible, and our model of intrafirm bargaining appears less likely to apply. (Indeed, the results of de Fontenay and Gans can be seen as a nice formalization of this notion.) On the other hand, for skilled or specially trained employees for which our setting is most relevant, a pool of readily available outside labor seems unlikely to be the norm.

Here we part company with de Fontenay and Gans, and argue that a freely available, ready-to-employ pool of perfectly substitutable workers is an exception rather than the rule for most highly skilled labor markets. First, there may be an unavoidable time cost in searching for a suitable employee and training the employee for the task at hand. In this sense, a worker from an external pool is never a perfect substitute for an internal counterpart. Second, it is not clear why in a labor-market equilibrium, a pool of skilled

employees should be waiting around for a job with reservation values below what identical employees are earning inside the firm. Even if such pretrained, skilled employees are available on the labor market, a firm engaged in employee negotiations would certainly like to reserve such workers and keep them on "retainer" to be called on in the event that an incumbent employee quits. But such an arrangement is likely to require paying such workers to wait in reserve, and it is unclear why such negotiations should differ from those of bringing the replacement worker inside the firm as in our analysis. Hence, perfectly substitutable highly skilled workers from an external pool are unlikely to be "free" in our opinion.

While we believe that in most wage-negotiation settings, perfectly substitutable external pools of labor are unavailable, we are still persuaded by de Fontenay and Gans that there may be circumstances in which external pools play important roles, generating underemployment in contrast to our results. As with most instances of competing theories, empirical work is needed to make a compelling case for one approach or the other. In addition, if one wants to take the external labor pool model to task, we need to move from the partial-equilibrium assumptions to incorporate a general-equilibrium story for the workers' reservation wages and to understand the theoretical foundations for an external ready-to-employ labor pool in equilibrium.

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