



A Note on G. Bertola and L. Felli (1993) "Job Matching and the Distribution of Surplus" *Ricerche Economiche*, 47, 65–92.*†

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In a recent article published in this journal, Bertola and Felli (1993) present a model of wage dynamics and turnover in the presence of firm specific (informational) human capital. In this model jobs are an experience good (i.e. the quality of a match between an employer and an employee is learned while the match is in place), and a finite number of symmetric employers Bertrand compete for essentially one worker. In particular, at every instant of time employers make wage offers to the worker who chooses which offer to accept, output is realized, all market participants update their beliefs concerning the worker's productivity in each employment and then the entire negotiation recommences. The worker is assumed to accept the highest wage offer he receives at every instant of time, in a word he is assumed to be *myopic*, and the quality of each match is normally distributed and independent of the quality of other possible matches.

Bertola and Felli go on to propose strategies for the market participants in which the firm in which the worker's expected productivity is highest and the firm in which his expected productivity is second highest both offer a wage equal to the worker's expected productivity in the latter firm. The worker then chooses to work for the former firm. These strategies imply that the worker is employed by the firm in which his expected productivity is highest, while the wage rate equals the worker's highest expected

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productivity among the remaining firms. They lead to a wage that is constant through tenure and decreases monotonically upon job termination.

Unfortunately, the proposed strategies do not constitute an equilibrium. [In other words, Proposition 1 on p. 72 of Bertola and Felli (1993) is not correct.] The purpose of the present note is to explain why they do not constitute an equilibrium, and to go on to describe a different, but related, model in which they do. In particular, much of the informal discussion by Bertola and Felli (1993) of their Proposition 1 is of relevance for the analysis of this related model. This related model is a special case of the model of Felli and Harris (in press).

That the proposed strategies do not constitute an equilibrium can be seen in the particular case in which there are two firms in the market. Suppose that the worker's productivity in firm 2 is known for sure to be μ_2 , but that some uncertainty as to the worker's productivity in firm 1 remains. Let the expected productivity in firm 1 be $\hat{\mu}_1$. According to the strategies proposed in Proposition 1, firm 2 will offer a wage equal to the minimum between $\hat{\mu}_1$ and μ_2 and the worker will choose the firm that offers the highest wage. Given these strategies for firm 2 and the worker, firm 1's decision problem is essentially the following. Firm 1 may either choose a risky action (to employ the worker) which comes at the cost $\min\{\hat{\mu}_1, \mu_2\}$ and yields as payoff $\hat{\mu}_1 - \min\{\hat{\mu}_1, \mu_2\} = \max\{0, \hat{\mu}_1 - \mu_2\}$; or choose a safe action (not employ the worker) which yields a zero payoff. Since the risky action generates a non-negative payoff and a strictly positive amount of information, firm 1 will always choose the risky action. We therefore conclude that the outcome obtained when market participants employ the strategies described in Proposition 1—namely that firm 1 employs the worker only when $\hat{\mu}_1 \geq \mu_2$ —cannot be an equilibrium.

We shall now describe the related model of Felli and Harris (in press). This model differs from the one analysed in Bertola and Felli (1993). It involves two possibly asymmetric firms, rather than many symmetric firms; a binomial distribution of the worker's productivity in each firm, rather than normally distributed productivities; and a fully forward-looking worker, as opposed to a myopic worker. The model also extends the analysis to a situation in which the worker can undertake one of two tasks in each firm, and the current match results in learning not only about the worker's aptitude for the two tasks that he can undertake for the current employer, but also about the aptitude for the two tasks that he can undertake for the alternative employer.

Now consider the (very) special case of this model in which: firms are symmetric; the worker undertakes only one task in every firm; and the worker generates information relevant only to the match in place. In this special case, the unique equilibrium of this

model involves exactly the same strategies described in Proposition 1 of Bertola and Felli (1993). Indeed, the employer is the firm in which the worker's productivity is highest, and the wage is the worker's expected productivity in the alternative employment. Furthermore the equilibrium wage monotonically decreases upon job termination. This implies that the informal discussion presented in Bertola and Felli (1993) is relevant for this particular case of Felli and Harris (in press).

It should be mentioned, however, that the features of this equilibrium are rather special. In particular, the fact that the worker is always employed by the firm in which his expected productivity is highest, and the fact that the wage is monotonically decreasing upon job termination, are not robust features of the model of Felli and Harris (in press). Indeed, Felli and Harris (in press) show that introducing an asymmetry between the two firms is enough to obtain a situation in which the worker may be employed by the firm in which his expected productivity is lowest but the employer's value of the information that the worker may produce when employed may more than compensate the difference in productivities. Further, Felli and Harris (in press) show that when firms are asymmetric the equilibrium wage may increase or decrease discontinuously upon job termination.

References

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