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The Economics of Overeducation: a Comment

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Abstract — In Tsang and Levin (1985) *Econ. Educ. Rev.* **4**, 93–104, the authors construct a model enabling us to determine the impact of overeducation on value added. However, their model neglects a possible direct "human-capital influence" on value added. Therefore this effect is incorporated in the impact of work effort on value added. This means that the Tsang–Levin model will overrate the impact of overeducation on production, as probably occurs in empirical work of Tsang (1987) *Econ. Educ. Rev.* **6**, 239–254.

IN THEIR paper "The Economics of Overeducation", Tsang and Levin (1985) develop a model enabling us to study the effect of overeducation on production. They define overeducation as "the possession by workers of greater educational skills than their jobs require". This implies that educated workers have unrealized expectations with respect to their work. Tsang and Levin point out that overeducation of the labor force not merely is the short-run phenomenon as neoclassical economics sees it. Both Spence's (1973) job screening model and Thurow's (1975) job competition model give reasons to believe that overeducation can be a persistent problem if the job structure is unresponsive to changes in the relative supplies of educated workers. According to industrial-psychology literature overeducated workers often exhibit counterproductive behavior in the workplace because of job dissatisfaction. This lowers their productivity.

Tsang and Levin construct a production-model which among others takes into account the impact of overeducation on production. Their model certainly can be seen as an improvement of production-functions in which an education/skill variable is added as a labor quality term, because the latter approach ignores the possible negative impact of overeducation on production. The Tsang–Levin model assumes that the production of gross output takes place in two phases. This means the gross output production function is preceded by a value added sub-model. As this comment only refers to the latter model, I here only discuss this value added function:

$$VA = H(L, LC, K, JS, t), \tag{1}$$

where L = $(L_1,\ldots L_n)$ is a vector of n types of labor corresponding to n different occupations;

LC = $(LC_1,\ldots,LC_n)$ is a vector of n sets of labor characteristics, including the skill/ability of labor, which we will here define as LC_{ie};

K = $(K_1,\ldots,K_n)$ is a vector of k types of capital;

JS = $(JS_1,\ldots,JS_n)$ is a vector of n sets of job structures corresponding to n types of jobs. Such a job structure includes the educational requirement of a job, which we will here define as JS_{ie};

t = the impact of time or technology on production.

Moreover Tsang and Levin develop an effort-function in order to be able to determine possible effects of overeducation on production:

$$E_i = E_i(LC_i, JS_i) \tag{2}$$

$$= E_i(WC_i, IS_i, I_i) \tag{3}$$

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where E_i = effort function of labor L_i,
WC_i = worker characteristics (subset of LC_i); among which
WC_{ie} = educational level of a worker;
IS_i = set of factors related to the system of supervision and incentives schemes (subset of JS_i);
I_i = worker's response to match/mismatch of LC_{ie} and IS_e.

This enables the authors to rewrite the value-added equation as:

$$VA = H(L, K, E, t), \quad (4)$$

where $E = (E_1,\ldots,E_n)$.

However, at this point the authors make a mistake by which the impact of overeducation on production will be overestimated. As Fig. 1 illustrates the skill level of workers (LC_{ie}) determines production theoretically in three distinctive ways. First, there can be a direct positive impact on value added, as postulated in human-capital theory: LC_{ie} in Equation (1), in Fig. 1 represented by α_1. Second, education can have a positive influence on work effort, (WC_{ie}) in Equation (3), α_2 in Fig. 1, and thereby on value added. Third, education can have a negative impact on job satisfaction when it implies that a worker is overeducated relative to the education required: I_i in Equation (3), α_3 in Fig. 1.

These three possible impacts make that it is not allowed to substitute Equation (2) in Equation (1) in the way Tsang and Levin do, as this means that a direct positive "human-capital" influence on value added (α_1) will be interpreted as the effect of E_i (β) and therefore as the impact of (over)education on work effort: α_2 or α_3. By this the Tsang–Levin model leads to an overrating of the impact of overeducation on value added.

As the same overrating occurs in Tsang (1987), the results of this study also overrate the negative effect of overeducation on work-effort and production. The impact of overeducation cannot be calculated by the product of $\alpha_3\beta$ as Tsang does, as then the "human-capital" effect (α_1) is incorporated in the effect of the skill level on job satisfaction/work effort (α_2). This means the influence of work effort on value added (β) is overestimated. Therefore the impact of overeducation on value added can be calculated by correcting $\alpha_3.\beta$ by the neglected influence of the skill level on value added: $(\beta - \alpha_1)\alpha_3$.

An easy solution for dealing with this problem in empirical research is not available. A second-best solution may be to neglect the impact of education on work effort (α_2), which enables us to recognize the probably more important direct effect of education on value added by adding LC_{ie} to the value added Equation (4).

I hope this comment on the Tsang–Levin model may contribute to future improvements of the model, as I recognize that an adequate model for studying the impact of overeducation on production is highly relevant, as I agree with Tsang and Levin that overeducation cannot be dealt with properly as merely a short-run problem.

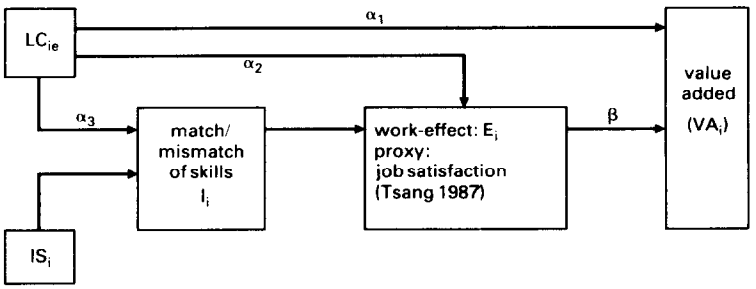

Figure 1.

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