Worker mobility, employer-provided general training, and the choice of graduate education ☆

Dora Gicheva *

Department of Economics, Bryan School of Business and Economics, University of North Carolina at Greensboro, P.O. Box 26170, Greensboro, NC 27402, USA

ABSTRACT

This paper links inherent mobility to observed schooling choices. A job search model with graduate education predicts that more mobile workers are more likely to enroll in full-time MBA programs. Adding to the literature on employer-sponsored general training, the model predicts that employers are likely to provide tuition assistance to workers who find quits costly. I use a panel survey of GMAT registrants to test some of the empirical implications of the model. I show that observable measures of job attachment are correlated with the probability of attending part-time and, conditional on part-time attendance, with the likelihood of receiving tuition reimbursement.

© 2011 Elsevier B.V. All rights reserved.

1. Introduction

There exists an extensive body of literature that studies the wage returns to education and training, but most of this research ignores the endogeneity of worker mobility. Inherent differences in the cost of changing employers may simultaneously affect observed wages, schooling choices, and turnover behavior. This paper addresses the issue theoretically, by building on existing job search models with costly quits, and empirically, by taking advantage of several unique features of Master of Business Administration (MBA) education.

I study graduate management education using a job search model with heterogeneity in workers' inherent costs of switching employers (Hey and McKenna, 1979; Burgess, 1992). In this partial equilibrium model, both part-time and full-time degrees increase productivity and move the distribution of wage offers to the right. Full-time degrees also increase the job arrival rate. This assumption is consistent with the specific nature of graduate business education. It is widely acknowledged that network building is an important component of MBA education and is more strongly emphasized in full-time programs (e.g. Alsop, 2005). A central implication of the model is that workers who have high

mobility costs are likely to self-select into part-time programs. Employers sponsor workers with very low propensity to change jobs. These workers would otherwise not obtain the degree because their returns are lower than the costs. Firms extract rents from the employment relationship because of the low probability of turnover.[1]

To test the empirical predictions of the model, I use a four-wave panel survey of Graduate Management Admission Test (GMAT) registrants. Since most graduate management programs in the U.S. require the GMAT for admission, the data are well-suited for studying the choice between full-time and part-time programs, conditional on the decision to apply to business school. The survey also asks respondents to report their employers' financial contributions towards the MBA education. I use survey questions about geographic mobility and the importance attributed to professional networking to infer a worker's inherent propensity to change jobs. I find that high mobility

[1] In addition to other incentives that firms and workers face, there are tax benefits to tuition reimbursement programs. Employers can deduct the full cost of educational assistance if the firm has a tuition reimbursement plan. According to a provision known as Section 127 Benefits, employer contributions towards tuition are treated like other fringe benefits (they have to be reported on employees' W2 forms) but are tax exempt up to $5250. Benefits amounting to a larger sum can be exempt if the reimbursement qualifies as a "working condition benefit". In 1990, an amendment to Section 127 qualified graduate education for the $5250 exemption. A 1996 amendment excluded graduate education from Section 127, but graduate courses were once again included in 2001. In the empirical part of the paper, I study men and women who took the GMAT in 1990 or 1991 and are observed until 1997 or 1998. I assume that all decisions about graduate education were made between the 1990 and 1996 changes in tax legislation and do not consider the consequences of the amendments.

costs are positively correlated with the probability of attending a part-time program and, conditional on part-time attendance, with the likelihood of receiving employer-provided tuition reimbursement. It is also consistent with the theoretical model that only about one half of part-time MBA graduates who are sponsored report a new employer in their first post-graduation survey, while about 91% of full-time business school graduates change firms after graduation.[2]

Because an MBA degree provides more general than firm-specific human capital, my study also adds to the literature on employer-provided general training. Becker (1964) is the first to point out that in a competitive labor market firms do not have an incentive to pay for general human capital. Workers have to be paid the full value of their general skills, hence employers cannot recoup the cost of training. However, MBA education is one of many examples of a labor market setting in which firms pay for general human capital, and numerous studies have attempted to provide a justification. A key assumption in Becker's (1964) theory is that the labor market is competitive; Acemoglu et al. (1999a) relaxes this assumption and argues that distortions in the wage profile of skilled workers make general skills equivalent to specific skills. When employers earn higher rents at higher levels of human capital, they have an incentive to cover part of the cost of general training. Acemoglu and Pischke (1999a) proposes several causes of wage distortion, including quitting costs that are increasing with skill and complementarity between specific and general skills.

Several other recent studies examine firm-sponsored tuition reimbursement programs in the context of labor turnover. Cappelli (2004) investigates tuition reimbursement programs for undergraduate education and suggests that such programs serve to attract and retain better workers. He argues that workers who receive tuition assistance are committed to staying with their employer until obtaining a degree. Manchester's (2008) study presents evidence that workers who do not intend to change jobs self-select into firms that offer tuition assistance. Benson et al. (2004) show evidence that tuition reimbursement programs are more effective in worker retention when employees are promoted after earning a degree. Their result is relevant for MBA education, where promotions upon degree completion are common.

My study is the first to analyze schooling decisions by looking at the choice between part-time and full-time graduate management education. Unlike other studies of employer-provided general training that treat mobility as an outcome of the training program, I model the cost of changing employers as a source of worker heterogeneity. The theory can explain several stylized facts from the literature, as well as some previously undocumented empirical relationships. The theoretical model is presented in the next section. Section 3.1 describes the data used in the empirical portion of the study. I show evidence in Section 3.2 that employers do not try to recoup the cost of tuition reimbursement by paying lower wages. Using a subsample of GMAT registrants who did not enroll in an MBA program, I test the validity of the GMAT Survey mobility measures in Section 3.3. The main implications of the model are tested in Sections 3.4 and 3.5, and Section 4 concludes.

2. Job search model of the returns to an MBA

2.1. Setup

The theory in this section is based on models of on-the-job search with positive cost of job switching (Hey and McKenna, 1979; Burgess, 1992) and employer-provided general training (Acemoglu and Pischke, 1999a). A worker's marginal product at firm j is a combination of general human capital τ and a match-specific component s_j: $\eta_j = (1 + s_j)\tau$. General human capital is acquired by obtaining an MBA degree; τ is equal to 0 without a graduate business degree and to $\tau^* > 0$ with a part-time or full-time degree. In each period employed workers meet a potential new employer with probability λ. It is often pointed out that full-time MBA programs offer better networking opportunities than part-time programs (e.g. Alsop, 2005), so I make the important assumption that a full-time MBA degree increases the job arrival rate: $\lambda = \lambda_1$ with a full-time MBA and $\lambda = \lambda_0$ for workers with a part-time MBA or without a degree, where $0 < \lambda_0 < \lambda_1 < 1$.[3]

The following sequence of events is assumed:

1. The worker starts in job j with $\tau = 0$ and firm-specific human capital s_j and decides whether to obtain an MBA degree. The job held prior to enrollment is taken as an exogenous initial condition.[4] A degree is obtained instantaneously at cost T that is lower for part-time students than for full-time students: $0 < T_{PT} < T_{FT}$. This assumption is based on the difference in the opportunity cost of part-time and full-time programs. While tuition and other monetary expenditures are comparable for the two types of degrees, full-time students spend time out of the labor force and forego almost two years of potential earnings and labor market experience. As Table 3 shows, part-time students generally do not experience a drop in hours or hourly wages, so this opportunity cost is zero for those who remain employed while enrolled in business school. There is no unemployment in the model because MBA graduates are allowed to return to their pre-MBA employer.
2. In each period, a new job offer arrives with probability λ. Upon meeting a potential new employer k, the worker draws a match-specific component s_k from a known distribution $dF^s(x)$. Productivity has a corresponding distribution $dF^\eta(x|\tau)$.
3. Given η_k, the firm and worker bargain over the wage,[5] and the worker decides whether to accept the new job or to stay with her current employer. If she decides to move, she has to pay a one-time cost c, which is constant over time but differs across workers. With firm-specific productivity η_j and a new draw η_k, a worker will accept the job if $\eta_k > v_c(\eta_j)$ and will not change jobs if $\eta_k \leq v_c(\eta_j)$ for some reservation function $v_c(\eta)$ that depends on c.
4. If the two players – the worker and the new employer – do not reach an agreement, the payoffs are postponed by one period, during which time the employee receives her disagreement value denoted by z and the firm receives z.
5. A new period begins, and a new job offer arrives with probability λ.

The normalization that without an MBA degree $\tau = 0$ means that the marginal product, wage, and employer value of the match all equal zero. Productivity with a graduate management degree is $\eta_j > 0$. The bilateral bargaining process determines a wage $w(\eta_j) > 0$ associated with this match-specific component and level of general human capital. All agents discount future earnings at the rate of

---

[2] Explicit lock-in contracts that require workers to remain with their firm after obtaining the degree are not the norm. The 2002 Corporate Recruiters Survey conducted by the Graduate Management Admission Council finds that 31% of employers who provide tuition assistance require employees to remain with the firm for a certain number of years. As a comparison, 72% of employers who sponsor MBA degrees have a requirement that students maintain a certain grade point average or some other MBA performance goal.

[3] This assumption is consistent with the data. Waves 3 and 4 of the GMAT Registrant Survey ask respondents who have attended business school whether their graduate management program has "Provided [them] with the right connections to get a good job." Responses are given on a seven-point scale ranging from −3 (False) to +3 (True). Sample members who completed a full-time MBA degree average 0.409 (with a standard deviation of 1.799) in wave 3 and 0.189 (with a standard deviation of 1.921) in wave 4. Part-time graduates in the sample average −0.3443 and −0.5086 in waves 3 and 4 (the standard deviations are 1.615 and 1.660, respectively). The differences across type of program are highly significant.

[4] The assumption that workers are employed in the initial period guarantees that a higher job arrival rate is less valuable to workers whose mobility cost is high.

[5] Mortensen (2005) shows empirical evidence from matched Danish firm-worker data suggesting that bargaining is a more likely wage setting mechanism than the profit maximization wage posting game in Burdett and Mortensen (1998). Flinn (2011) is another recent study that introduces a job search model with endogenous schooling decisions and a Nash bargaining process that governs how the surplus from education is split between workers and firms. The main source of heterogeneity in Flinn's (2011) theory is inherent ability, and the model is used to analyze the choice between high school and college.