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Job search and academic achievement

Bas van der Klaauw [a,*], Aico van Vuuren [b]

[a] Department of Economics, VU University Amsterdam, Tinbergen Institute and CEPR, De Boelelaan 1105, NL-1081 HV Amsterdam, The Netherlands
[b] Department of Economics, VU University Amsterdam, Tinbergen Institute, De Boelelaan 1105, NL-1081 HV Amsterdam, The Netherlands

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ABSTRACT

The paper develops a structural model for the labor market behavior of students entering the labor market. We explicitly model the trade-off between devoting effort to studying and to job search. Furthermore, we allow for on-the-job search. The model is estimated using a unique data set of individuals who completed undergraduate education in the Netherlands between 1995 and 2001. Our estimation results show that labor market returns of high grades are low. Wage increases between jobs are explained by labor market friction rather than returns of early work experience. Our results indicate that a 1 percentage point decrease in the unemployment rate increases wage offers on average by 3 percent, but that the amount of job search effort is not very sensitive to business cycle fluctuations. Policy simulations show that study effort and hence academic achievement are much more sensitive to financial incentives than job search effort and labor market outcomes.

1. Introduction

In the final stage of their academic studies, students not only study hard to improve academically, but also start looking for work. This paper focuses on the trade-off between studying and job search. We develop a job-search model describing labor market behavior of individuals around the moment at which they complete their education. The model allows us to investigate the transition from college to the labor market and the returns of better academic performance. Moreover, we exploit the relatively long observation period to consider the importance of business-cycle fluctuations for the labor market prospects of students.

In the empirical analysis we use a discrete-time job-search model with endogenous job-search and study effort. Whereas the returns of job search while studying are that individuals start their first job earlier, the returns of study effort take the form of better grades, which may have long-lasting positive returns on the labor market. Academic achievement is thus endogenous and depends not only on study effort but also on ability. Explicitly modeling job search prior to graduation provides a natural model for individuals who anticipate the moment of graduation and have not been unemployed between leaving school and starting work. We also allow for on-the-job search, since quite a number of individuals switches jobs within the first few years after leaving college (see Topel and Ward, 1992). Wages in the first job are thus not a proper indicator for the present value of life-time earnings (e.g. Eckstein and Wolpin, 1995). We do not

* Corresponding author.
E-mail addresses: bklaauw@feweb.vu.nl (B. van der Klaauw), vuuren@tinbergen.nl (A. van Vuuren).

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require that the structural parameters describing the job search environment to be similar for individuals looking for their first job and for employed workers.

A structural model has several advantages when analyzing the labor market behavior of students. The fact that labor market transitions, wages and academic achievement are jointly determined, makes it possible to study the interdependency between these variables. Since we explicitly model study effort and job-search effort, we can use the model to investigate behavioral responses to policy interventions. In particular, we simulate the effects of reducing unemployment compensation for recent graduates and the effects of providing financial rewards for good academic performance.

Our model builds further on Wolpin (1987) and Ferrall (1997). Wolpin (1987) stipulates that all individuals start searching the same fixed period before graduation and that in each period they devote the same amount of effort to job search. Ferrall (1997) assumes that at the moment of graduation all individuals have received exactly two job offers, and are employed if the wage associated with the best job offer exceeds the individual's reservation wage. In our model job-search effort before graduation is endogenous—and thereby also the number of job offers collected before graduation.[1] Other structural empirical analyses do not explicitly model the job-search process before graduation, which may cause selection bias. Bowlus et al. (2001) ignore search spells in which individuals start working immediately upon leaving school. Gras and Lindeboom (1994) adopt a similar strategy, but correct for potential selection among those who failed to find a job before graduation.

The empirical analyses in this paper use data from an annual survey of young workers who recently finished undergraduate education at Dutch universities. The data describe cohorts of individuals who graduated in economics, business, Dutch law or psychology between 1995 and 2001. Since labor market conditions for these individuals differ, we estimate our model separately for different studies. Our intention is not to estimate returns to education or to compare returns of the different studies. The data are described in a period in which the Dutch economy experienced a period of relatively fast growth until the end of the 1990s and a slowdown after 2000. We allow the structural parameters to depend on business-cycle indicators.

Our estimation results show that, conditional on graduating, the labor market returns to good academic performance are very low. This also explains the finding that study effort among college students in the Netherlands is low (e.g. Leuven et al., 2009). Low study effort is well recognized in the Dutch public debate, where students are often criticized for a lack of ambition to perform well in college. The very low labor market returns to good academic performance contradict most research on the transition from school to work coming from the US. However, Colonna (2007) finds that also in Italy the college premium is much lower than that in the US. Colonna (2007) and Krueger and Mueller (2008) show that there may be substantial differences between the US and European labor markets.

Because young workers lack relevant work experience, labor market outcomes of young workers are more sensitive to business-cycle fluctuations than are the labor market outcomes of older workers. Our empirical results show strong effects of macroeconomic conditions on labor market prospects of students. In particular, a 1 percentage-point decrease in the unemployment rate increases wage offers by around 3 percent. We find that the optimal job-search effort does not respond much to business-cycle fluctuations. This seems to contradict Shimer (2004), who argues that even though the returns of job search are lower during recessions, job-search effort can be increasing during recessions.

Between jobs, wages increase by about 16–19 percent. However, our models find evidence for substantial returns to early work experience. This implies that these wage increases are driven by labor market friction. This coincides with Topel and Ward (1992), who argue that young workers are searching for good matches and that the behavior of young workers is largely consistent with job search theory. Also Christensen et al. (2005) argue that the effect of tenure on wages is small in the wage growth of individuals.

Our estimated model will be used to perform two policy experiments. As of July 2009, individuals under the age 27 will no longer be entitled to collecting welfare benefits when unemployed. Since almost all individuals finish undergraduate education before that age, this policy change affects almost all individuals in our data set. Model simulations show only very modest effects on labor market outcomes. Reservation wages are already so low that most individuals accept all job offers. However, most students substitute study effort into job-search effort. Whereas grades drop dramatically, there is only a very modest increase in employment rates upon graduation. Our second policy experiment is to provide a financial reward to students who graduate with high grades. Simulations show that such a reward substantially increases study effort and academic performance. But because returns to high grades are low, labor market outcomes do not improve. A combination of both policies improves grades but leaves labor market outcomes almost unaffected. It should be noted that the amount paid to reward students with high grades is much lower than average welfare benefit payments.

The paper proceeds as follows. Section 2 provides institutional background on the Dutch educational system and business cycle variation during the observation period. Section 3 presents the structural model and describes the estimation of our structural model. The data are discussed in Section 4. Section 5 presents results of reduced-form analyses to investigate the validity of the structural model. Section 6 presents the estimation results of the structural model. Section 7 concludes.

[1] See Bloemen (2005), Fougère et al (2009), Stern (1989), and Yoon (1981), for structural empirical analyses of job-search models with endogenous search effort.