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College quality and the positive selection hypothesis: The 'second filter' on family background in high-paid jobs

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ABSTRACT

This paper investigates the heterogeneous returns to college quality across the wage distribution, using Norwegian administrative data. An ongoing debate in the literature is whether students who are most likely to attend a high-quality college benefit the most from college quality (the positive selection hypothesis) or whether students who are least likely to attend a high-quality college benefit the most (the negative selection hypothesis). The findings in this paper support the predictions in the positive selection hypothesis, especially at the top of the wage distribution. But the findings suggest that this pattern of positive selection is not caused by students self-selecting into colleges based on expected gain. Instead, the findings suggest that a second filter on family background exists. Students from privileged background are not only more likely to attend a high-quality college (the first filter), but are also more likely to convert their high-quality college education into success at the labor market (the second filter).

1. Introduction

The growing diversity of educational credentials makes it harder for employers to judge applicants' education. This may in turn strengthen the value of attending a well-known college (Bills, 2003). The background for this process is the transformation from an elite system of higher education to a mass system (Trow, 1972). The transformation is characterized not only by a growth in number of students, but also by an increasing diversity of higher education (Triventi, 2013b). Because of their uncertainty of students' qualifications, employers target students from what they assume to be high-quality colleges, as well as colleges they have recruited from earlier (Morley & Aynsley, 2007; Rivera, 2011). According to one study, employers believe that high-quality colleges already have selected for them, and, accordingly, that students who have attended high-quality colleges have some desirable attributes (Morley & Aynsley, 2007). Still others suggest that rather than serving as a screening or signaling device, college quality influences worker productivity (Psacharopoulos, 1974).

Since college quality became subject to empirical studies in the late 1960s, studies attempting to quantify the effect of college quality have advanced considerably (for reviews, see Brewer & Ehrenberg, 1996; Gerber & Cheung, 2008; Pascarella & Terenzini, 2005; Zhang, 2005). Yet, despite the major advances, most quantitative studies fail to see how college quality is entwined with other aspects of society. For instance, attending an elite college has become a strategy to pass privileges from one generation to another (Lucas, 2001; Stevens, 2007), and historically, elite colleges have developed the admission criteria in ways that favor privileged groups of society (Karabel, 2005). But not only are students from privileged homes more likely to attend

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high-quality colleges, they may also benefit more from doing so (Karabel & McClelland, 1987; Rivera, 2011). To fully understand the role college quality plays, studies need to investigate how both the admission and the returns to college quality are entwined with family background.

Additionally, most quantitative studies fail to account for how the returns to college quality differ across the wage distribution. Employers' attention to college quality appears to be particularly salient in the elite labor market, and increasingly more so (Rivera, 2011). Elite firms receive a large number of applications due to the growing supply of higher educated. To cut the costs, firms need strategies to limit the number of potential candidates (Rivera, 2011; Tholen, Brown, Power, & Allouch, 2013). Thus, elite firms often select a few elite institutions from which they will accept applications and hire through on-campus recruitment programs (Rivera, 2011). Especially at the super-elite institutions, some elite firms spend a lot of resources on wooing potential applicants (Rivera, 2011). The networks and connections that students have developed at high-quality colleges, with students, academic staff, and employers, may open doors into the elite labor market that otherwise would have been locked (Lee & Brinton, 1996; Tholen et al., 2013). In sum, studying average wages conceals the role (if any) college quality plays in securing access to the elite labor market.

This paper investigates the heterogeneous returns to college quality across the wage distribution, using Norwegian administrative data. It contributes to the existing literature in three ways. First, this paper investigates whether students who are most likely to attend a high-quality college (the positive selection hypothesis) or least likely to attend a high-quality college (the negative selection hypothesis) benefits the most from attending a high-quality college (Brand & Xie, 2010). In particular, it examines whether students self-select into colleges based on expected gains. A common assumption in the returns to education literature is that students make educational choices that best utilize their talent (Willis & Rosen, 1978). With regard to college quality, this means that students select the college that yields highest returns (e.g. Brewer & Ehrenberg, 1996). Whereas some studies find support for this hypothesis (e.g. Willis & Rosen, 1978), other studies find support for the opposite assumption, that students least likely to attend college benefit the most (e.g. Brand & Xie, 2010). Thus, the evidence on self-selection is mixed. In this paper, I shed light on this debate by exploiting students' college applications. If students self-select into colleges based on expected gains, then students *applying* to high-quality colleges should benefit the most from college quality.

Second, this paper examines empirically whether a *second filter* on family background exists (Rivera, 2011). Students originating from privileged backgrounds have higher probability of attending a prestigious or high-quality college than disadvantaged students (e.g. Triventi, 2013a), and perhaps increasingly so (Lucas, 2001). Indeed, the concentration of wealthy students has increased in high-quality colleges in the US the last decades (Astin & Oseguera, 2004; Bastedo & Jaquette, 2011; Belley & Lochner, 2007; Hoxby & Avery, 2012). In addition to this first filter, recent qualitative studies suggest that among the students at high-quality colleges, those originating from privileged backgrounds are also more likely to convert their education into success in the elite labor market, a second filter on family background (Brown & Hesketh, 2004; Rivera, 2011, 2012). According to these studies, students who are most likely to attend a high-quality college benefit more not because of self-selection on the gain, but because of their privileged family backgrounds. However, few studies have quantified these heterogeneous effects of college quality by family background, and none have investigated whether the heterogeneous effects are stronger at the upper end of the wage distribution. In this paper, I employ unconditional quantile regression to investigate whether the returns to college quality differ more by family background at the upper end of the wage distribution compared to the lower end.

Finally, this paper contributes to the discussion on causality in the college quality literature. Researchers have recently paid a lot of attention to omitted variable bias (e.g. Dale & Krueger, 2002; Hoekstra, 2009; Long, 2008; Saavedra, 2009). But this literature has, with a few notable exceptions (Brand & Halaby, 2006; Brewer & Ehrenberg, 1996), only aimed at adjusting for background characteristics. Another distinct source of bias is selection on the treatment effect itself (Morgan, 2001). Contrary to popular belief, effect heterogeneity biases the findings too if the effect of the treatment varies by the probability of being treated (Xie, Brand, & Jann, 2012). By investigating the heterogeneous returns to education, this paper sheds some light on whether treatment effect heterogeneity biases the estimated returns to college quality in the literature.

In the following, Section 2 discusses the theoretical background and present hypotheses, Section 3 introduces the Norwegian case, Section 4 describes the data and methods, Section 5 presents the empirical findings, and Section 6 discusses these findings. These sections will demonstrate that in Norway, students who are most likely to attend a high-quality college are also those who are most likely to gain economically, especially at the top of the wage distribution. However, this pattern of positive selection is not caused by students self-selecting into colleges based on expected gain. Instead, the findings suggest that a second filter on family background exists. Students from privileged backgrounds are not only more likely to attend a high-quality college (first filter), but they are also more likely to convert their high-quality college education into success at the labor market (second filter).

2. Theoretical background and hypotheses

2.1. The positive and the negative selection hypothesis

Brand and Xie (2010) summarize the recent discussion on effect heterogeneity in the returns to education literature and distinguish between the positive and the negative selection hypothesis. The original positive selection hypothesis, as Brand and Xie (2010) outline it, is closely related to the rational-behavioral model in economics. The human capital model considers education as a rational investment of the individuals in their own productivity