Economics of Education Review 52 (2016) 225–250

Contents lists available at ScienceDirect

Economics of Education Review

journal homepage: www.elsevier.com/locate/econedurev

Credit constraints in higher education in a context of unobserved heterogeneity

Eugenio Rojas[a], Rafael Sánchez[b,*], Mauricio G. Villena[b]

[a] University of Pennsylvania, 160 McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104, USA
[b] Adolfo Ibáñez University, Business School, Diagonal Las Torres 2700, Peñalolén, Santiago, Chile

ARTICLE INFO

Article history:
Received 16 December 2014
Revised 7 March 2016
Accepted 10 March 2016
Available online 22 March 2016

JEL Classification:
I22
I23
I25
I26

Keywords:
Grants
Rate of return
Student financial aid

ABSTRACT

This article tests the existence of credit constraints on higher education access by estimating actual marginal returns in the context of unobserved heterogeneity. We estimate higher education returns for those who attended and compare them with those of individuals who are *at the margin* of attending. Following the (Carneiro and Heckman, 2002) reasoning, if the returns of the latter group are larger than those of the former one we could be in presence of unobservable barriers to higher education access, such as credit constraints. We use a rich administrative database composed of three sources: data of enrollment and graduation from the Chilean higher education system, test scores and labor market outcomes from the Chilean Unemployment Insurance database. Our results suggest that there is no evidence of credit constraints for enrolling into the Chilean Higher Education system. However, we do find some evidence of credit constraints in graduation.

1. Introduction

The promotion of higher education access, specially for those individuals with most limited economic resources, has turned to be a priority in the public policy debate of several countries, no matter the political spectrum. A common method for tackling this concern is by expanding the coverage of scholarships and student loans. This expansion is grounded on the assumption that a fraction of the population faces credit constraints for financing their higher education studies, which may lead to human capital under investment and hence to lower private and social returns. Nevertheless, these benefits associated with less tighter credit constraints come at a cost, the large fiscal burden of these policies and the alternative costs of resources that may be allocated to individuals that may have access to private resources. Thus, these are elements that the authority must be cautious with when expanding the coverage of benefits, specially in a context of limited fiscal resources. An indiscriminate growth of benefits, in a context without credit constraints, carries significant opportunity costs because those resources may be destined to alternative public policies with larger social returns.

In this context, the identification of credit constraints is an important challenge for public policy. Several approaches for testing the existence of credit constraints in higher education have been considered in the literature, as it is very difficult to identify credit constrained individuals (Kane, 1996). On the one hand, there are articles focused on assessing the effect that financial aid has on enrollment (Kane, 1996, 2007); (Cameron & Heckman, 2001); (Lochner & Monge-Naranjo, 2011); (Rau, Rojas, & Urzúa, 2013). On the other hand, we find studies that consider the economic returns of higher education (Carneiro & Heckman, 2002); (Cameron & Taber, 2004); (Kaufmann, 2014). The first group analyzes if the access to financial aid

* Corresponding author. Tel.: +56 2 23311169.
E-mail addresses: eurojas@sas.upenn.edu (E. Rojas), rafael.sanchez@uai.cl (R. Sánchez), mauricio.villena@uai.cl (M.G. Villena).

http://dx.doi.org/10.1016/j.econedurev.2016.03.004
0272-7757/

positively affects higher education enrollment, a result that may shed light on the existence of credit constraints. The second group is focused on higher education returns and with them, it is assessed whether individuals who decided not to attend higher education would have obtained larger returns than those who decided to attend.

Regarding the first group, Kane (1996) suggests the existence of credit constraints on the U.S. higher education access by analyzing tuition costs: in those states with higher tuition costs there is greater delay in enrolling in higher education institutions. The delay in enrollment can be understood as a previous saving process in order to be able to fund higher education studies. Lochner and Monge-Naranjo (2011) conclude similar results via simulations, where positive effects on enrollment are found when relaxing financial requirements of higher education access.

Articles focusing on economic returns, such as Cameron and Heckman (2001) and Cameron and Taber (2004), find no evidence of credit constraints on higher education access in United States. These articles suggest that ability constraints (or long run constraints) rather than credit constraints (or short run constraints) are the main determinants behind the decision of attending a higher education institution. Kaufmann (2014) uses a survey of economic returns that individuals expect to have in the future in order to identify the existence of credit constraints in Mexico, concluding that those who are at the margin of attending or not a higher education institution would have larger economic returns than those who are attending, implying the presence of credit constraints.

The heterogeneity of the results of previous studies related to returns to education and the role of credit constraints is mainly due to two problems. First, individuals are likely to select themselves into higher education according to unobservable factors to the researcher. Second, the returns to higher education might be heterogeneous. The first problem makes it impossible to identify causal effects by applying ordinary least squares (OLS) estimation. The second problem allows the estimation of a causal effect by, for example, using instrumental variables (IV). However, in this latter case the explanatory power is limited to persons affected by the instrument as different instruments will affect different individuals. This is why the identified effect needs to be interpreted as the local Average Treatment Effect (LATE, Imbens & Angrist (1994)). Because of these difficulties, Heckman and several co-authors have proposed to estimate the Marginal Treatment Effect (MTE) as an alternative to address both of these problems.

Our article uses the methodology proposed in Carneiro, Heckman, and Vytlacil (2011) for estimating marginal returns of higher education, and contributes to the existing literature by considering unobserved heterogeneity and rich administrative data. In particular, this paper tests the existence of credit constraints in higher education access by comparing actual economic returns of individuals who attended to higher education with those of who are *at the margin* of attending, in the context of unobserved heterogeneity models (Heckman & Vytlacil, 2005); (Heckman, Urzúa, & Vytlacil, 2006); (Carneiro, Heckman, & Vytlacil, 2010, 2011); (Kaufmann, 2014). In order to identify credit constrained individuals, and following Carneiro et al. (2011), our empirical strategy consists in simulating marginal changes in different policies so we can identify who are at the margin of attending or not to a higher education institution. Thus, by using the Marginal Treatment Effect methodology (see more details in Heckman and Vytlacil (1999, 2005); Heckman et al. (2006) we estimate the economic returns of this group and then compare it with the estimated returns of those who attend a higher education institution.

The intuition behind our empirical strategy follows the idea posed in Carneiro and Heckman (2002). If individuals that are at the margin of attending (or not) a higher education institution obtain larger economic returns than those of individuals who attend a higher education institution, then the formers are facing an unobservable barrier (for the econometrician) in the access to higher education, such as credit constraints. This approach is directly related to what is presented in articles such as Becker (1967), Willis and Rosen (1979) and Card (1994), in which these constraints are modeled as self-specific interest rates (individuals who face greater interest rates will have more difficulties obtaining resources to finance their higher education studies).

The specific application presented in this work is the Chilean case, for cohorts who started to study in early 2006, which is before the large increase in the number of scholarships and loans for higher education. We use a rich administrative database composed of three sources: data of enrollment and graduation from the Chilean higher education system, test scores and labor market outcomes from the Chilean Unemployment Insurance database. Our results show that, given the existent financial aid scheme of scholarships and loans in 2006, the returns of those who are at the margin of attending or not to a higher education institution are lower than of those who decided to attend, which is consistent with no credit constraints. This result holds even when considering different policy changes and different functional forms.

We then split our main model into two parts: (1) we compare individuals who enroll (regardless if they graduate or not) versus those who do not enroll into higher education in order to isolate enrollment constraints and (2) given enrollment, we compare individuals who complete their degree versus those who dropped out in order to isolate graduation constraints. Results suggest that no credits constraints are found for enrollment but some evidence of credit constraints are found for graduation (when a flexible especification is used).

This paper is organized as follows. Section 2 describes the institutional background of the Chilean higher education system. Section 3 describes the proposed model to be estimated, along with the corresponding assumptions. Section 4 describes the datasets and presents descriptive statistics of our sample. Section 5 presents our results of the main model. Section 6 presents our results for the proposed extensions of the model into (i) enrollment and (ii) graduation. Finally, Section 7 puts forward some concluding remarks.