On the uncertain nature of human capital investments

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Citation for published version (APA):
Mazza, J. (2012). On the uncertain nature of human capital investments Amsterdam: Universiteit van Amsterdam
Summary

This dissertation is about the unpredictable benefits of investments in human capital and how individuals account for and respond to it.

Educational risk can be defined along two dimensions: ex-ante and ex-post. Ex-ante risks pertains to all those uncontrollable and unforeseeable events that might undermine the successful accomplishment of the elected course of study. Ex-post risks stem from occurrences developing after the educational path has been terminated and the individual approaches the entry into the labor market. Where he will position in the earning distribution of a specific career will not be learned until that person undertakes it. Furthermore, temporal laps between choice and accomplishment of the selected field of study increases incertitude. The labor market, as every other market, is intrinsically and increasingly, dynamic. Its opportunities can vary rather quickly in time. Technological progress can condemn entire professional figures to obsolescence in the worst cases or, more often, seriously undermine their profitability. This specific type of risk has been defined “market risk”.

The economically relevant aspect of uncertainty in education investment resides primarily in the possible repercussion that ex-ante and ex-post risk have for selection of education and, in turn, for the type of skills supplied in the labor market.

Chapter 2 answers a fundamental question for the understanding of investment decisions into education: do individuals have perception of its uncertain nature? This chapter provides empirical evidence on the level and extent of knowledge that Dutch high school students possess at the time immediately preceding the decision on whether to continue or not to tertiary education. The definition adopted here of level of knowledge includes both awareness of the riskiness entailed in such an investment and the returns that it can generate. The particular structure of the collected data also allows inference on
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three interrelated aspects: if, and to which amount, a compensation for risk is required in the labor market; whether students possess private information and if they exploit it when forming their expectations; the expected returns that an investment in education would bring.

The direct survey method points to wide dispersion of expected median earnings among individuals, but few systematic influences can be pinpointed. The same holds for variance and skewness. Students allow for wide dispersion in the wages distributions associated with a particular education scenario and dispersions vary strongly between individuals. But again, there are very few systematic patterns that can explain the differences between individuals. Surprisingly enough, respondents do not seem to demand any type of compensation for this risk. A most remarkable result in our analysis is the systematic lower wage expectations that females have for themselves.

Chapter 3 is a replication of a recent study by Chen (2008) on a sample of American men. The replication is carried on on the same data as the original work and extended to three additional samples of American females and British and German individuals. Chen (2008) presents estimates for the causal effect of schooling on risk robust to at least two longstanding methodological complications affecting the previous literature on the matter: self-selection into education and the presence of unobserved heterogeneity. Concerns of self-selection arise every time an individual has the freedom of choosing whether or not to participate in any kind of activity such as schooling. Unobserved heterogeneity, instead, indicates all that information used by the individual when choosing among different alternatives hidden to the researcher observing the revealed choice. Both phenomena, if left unaccounted, can severely undermine the reliability of any type of estimates calculated on revealed data.

The results of the replication on the same dataset and on the three additional samples are mixed as we are able to reproduce the original results only partially. Our replication of Chen’s results shows, at the very least, that differences in sample composition and instrumental variable choice give rise to very different results. This does not build confidence in the robustness or general validity of the outcomes and the puzzling results obtained for the German sample particularly, raise even more doubts.

Chapter 4 tests the self-selection hypothesis in the specific context of educational choices by asking if, and to which extent, concerns about uncertainty of future payoffs affects College students choice of major degree. This surpris-
ingly unexplored question has potential repercussions for both the design of the appropriate empirical strategies to be followed for drawing reliable conclusions on the causal effect of education on risk and on the formulation of possible policies providing protection against risk by the policy makers. The estimation strategy utilized exploits the model developed in the following Chapter 5 combining it with other proposed semiparametric estimators preserving most of the valuable attributes of semiparametric estimators.

Results show that acknowledging risk shows significant biases in observed wages and observed wage variances for every one of the four College major category - Humanities, Sciences, Social Sciences and Health and Education - that I partition my sample into. The test of the Roy model for educational choices support the role of comparative advantages in schooling decisions for three out of the four College major categories the only exception being Humanities. I also find that OLS estimation severely underestimate returns to education up to more than 100% of the measured effect.

Chapter 5 is strictly related to Chapter 3 as it answers the same research question, but it does so by forgoing the normality assumption which is central for the validity of the method replicated there. In fact, it has been widely accepted that the parameter estimates obtained via a parametric selection correction model may be significantly biased due to the restrictive parametric distributional assumptions. The method introduced in this Chapter is robust to a possible misspecification of the error term structure producing valid estimates for the effect of schooling on risk in a wider set of cases than its parametrical counterpart.

The results shown there do not confirm most of the previous parametric estimates and they indicate that investing in education has a significant impact on risk of future wages and this is especially true for college education if not finished. If compensation for risk exists in the labor market and if this compensation works via higher wages for riskier occupations, our findings might contribute to explain the increase of inequality observed in the U.S. and other advanced economies in the past 30 years.