



Do wage expectations predict college enrollment? Evidence from healthcare



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ABSTRACT

We study the effect of ex ante expected wages rather than realized wages on the decision to pursue a nursing college education in Switzerland. On average, wage expectations reflect observed market wages, but with large dispersion among individuals. We collected data from a full cohort of healthcare trainees in their third year of training on upper-secondary level. Those trainees who expected a greater return from nursing college (tertiary level) were more likely to enroll in nursing college later on; the effect is substantial and almost orthogonal to individuals' characteristics. This indicates that policies that increase returns from studying nursing can indeed attract new students to reduce the shortage of nurses. Subjective ex ante wage expectation data are useful in predicting the decision to enroll in college.

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1. Introduction

Influenced by the work of Charles Manski (1993, 2004, 2007), a rapidly developing literature has shown the usefulness of subjective data to analyze education choices. The traditional approach was to impose an econometric model on observable market and choice data to deduce individuals' information sets ex hypothesi.¹ As Manski noted, this revealed preferences approach relies on strong assumptions that cannot be tested with choice data alone. Including subjective data allows relaxing these assumptions and getting a better understanding of the choice process. We adopt this approach for educational choices in healthcare.

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¹ Examples of this approach include Willis and Rosen (1979), Keane and Wolpin (1997), Belzil and Hansen (2002), Cunha et al. (2005), and Befy et al. (2012).

The behavioral literature on education choices has brought forth the four following stylized facts about wage expectations: First, survey questions on subjective expectations yield high quality, meaningful data (Dominitz and Manski, 1996; Betts, 1996; Wolter, 2000; Brunello et al., 2004; Webbink and Hartog, 2004; Nicholson, 2005; Jensen, 2010; Schweri et al., 2011; Hartog et al., 2014; Huntington-Klein, 2015).

Second, the same literature shows that individuals' wage expectations are anchored to observable market wages in most cases. The average of expectations is close to the current average of market wages in most studies, although some studies find over- or underestimation.² Overall, individuals seem well-informed about future earnings prospects.

Third, individuals nonetheless report a high degree of uncertainty about their future wages when asked to state their expectations in the form of a wage distribution rather than just a mean or median wage (Dominitz and Manski, 1996; Schweri et al., 2011).

Fourth, even expected mean wages exhibit a high variance between individuals that can hardly be explained by individuals' characteristics (Webbink and Hartog, 2004), nor by actual returns projected on the basis of individuals' characteristics (Huntington-Klein, 2015).

These results raise the question whether expected returns are a good predictor of education choices (Huntington-Klein, 2015). While the quality and overall accuracy of wage expectations elicited in surveys speak in favor of an important role for return expectations, high uncertainty and heterogeneity raise doubts whether individuals indeed base their choice decisions on such expectations. The empirical literature has thus not yet firmly established a central role of wage expectations for education choices, as it is assumed by the standard schooling model.

Several recent studies find that wage expectations are significant determinants of students' choice of a college major, but with a minor influence compared to other factors such as beliefs about own ability (Zafar, 2011a; Arcidiacono et al., 2012, 2014; Stinebrickner and Stinebrickner, 2014). This result may be due to the specific setting of college major choice, where students have already made the decision to enter college. Instead, we analyze demand for college education after completing upper-secondary education.³ The decisions on the extensive margin may be more sensitive to returns than the decisions on the intensive margin. More precisely, we analyze the choices for further education open to trainees that work in hospitals and nursing homes in Switzerland. These trainees are trained in formal, nationally regulated and certified three-year programs. During work in hospitals and homes, they are likely to learn about both their own ability and about working conditions in healthcare, including wages. Hence, they can base their decision about attending nursing college after their training on their expected returns to nursing. In order to go beyond the short-term career decisions observed in the follow-up survey, we also elicited individuals' mid-term career choice probabilities, as suggested by Manski (2004) and Blass et al. (2010). We analyze choice probabilities in multivariate fractional regression models, which have recently been developed specifically for this type of dependent variable (Mullahy, 2015).

Compared to the studies that have used samples of students from single colleges with different majors, the focus on a specific educational domain has the advantage of sample homogeneity. The large differences in amenities among the different jobs and occupations that are open to graduates with different majors make it difficult to control for non-pecuniary preferences in major choice, which may also lead to compensating differentials in wage expectations. In contrast, healthcare employees and registered nurses work together on the same teams in the same hospitals and nursing homes. Concerns about differences in characteristics between different career alternatives are less important in this setting because healthcare employee and nursing jobs have similar working conditions (e.g., shift work). Thus, our analysis contributes to the question of the predictive value of wage expectation for educational choice in a specific, well defined situation, thereby controlling for many factors that are usually unobserved in broader choice situations. At the same time, our study has specific relevance for the problem of increasing shortages of nurses in many industrialized countries (Simoens et al., 2005) and the potential role of wage increases to reduce these shortages.⁴ We analyze the effect of healthcare employees' expected returns from nursing education, collected in a first survey, on their subsequent decision to enroll in nursing college, determined from a follow-up survey (in Switzerland, healthcare employees are the main recruitment pool for new nursing students). We find that healthcare trainees' wage expectations are close to actual market wages for both healthcare employees and nurses at different ages. Wage expectations are thus realistic, but the variance of expectations increases with age and level of education of the hypothetical wage earner, indicating trainees' increasing uncertainty about wages further in the future. Controlling for a variety of personal and institutional characteristics, we find that ex ante return expectations significantly predict subsequent career paths, both actual short-term careers and mid-term career expectations. We further show that trainees with lower time preference, higher risk aversion, and higher extrinsic motivation are more likely to enroll in nursing college.

This paper is organized as follows. Section 2 provides information on the institutional setup of Swiss healthcare education. In section 3, we discuss how we analyze graduates' further career path using the multivariate fractional regression model,

² A broader discussion including additional literature can be found in our earlier IZA Discussion Paper no. 9120.

³ Few studies looked at the contemporaneous correlation of wage expectations and enrollment decisions (Kodde, 1986, Attanasio and Kaufmann, 2014). We are not aware of a study that analyses the predictive value of ex ante wage expectations for the subsequent college enrollment decision.

⁴ In Switzerland, national projections estimate that the demand for nurses will further increase by 13–25% by 2020 (OBSAN, 2009) and the national strategy includes an attempt to increase enrollment in nursing colleges (DEA, 2010). A growing body of literature addresses nurses' labor supply (e.g., Antonazzo et al., 2003; Di Tommaso et al., 2009; Hanel et al., 2014; Eberth et al., 2015), but the effect of wages on the training of new nurses has received little study; exceptions are Spetz (2002) and Chiha and Link (2003).

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