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## Investments in human capital, wage uncertainty, and public policy

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### Abstract

The importance of risk characteristics of human capital for the design of tax and education policy is explored. Wages are uncertain and education, while increasing the expected wage, may increase or decrease wage variance. The government has strong reasons to encourage human capital formation in the latter case, partly due to the insurance effect of human capital, and partly due to the way the individuals—under a plausible restriction on ‘prudence’—respond to changes in risk. The analysis is illustrated using two models of education: one where education helps the individuals make better occupational choices, and a standard risk-augmented Becker-type model.

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### 1. Introduction

Individuals face, over the course of their lifetimes, considerable uncertainty regarding earnings. One indication of this is the large residual variance typically remaining in empirical work attempting to explain wages by schooling, experience

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and other explanatory variables.<sup>1</sup> By investing in education an individual can shift the wage distribution and achieve a higher expected wage. A feature that distinguishes investments in education from other risky investments is the non-existence of a risk-free option—not even a worker who abstains from investing in education can be certain about her future earnings. Indeed, an interesting question from the point of view of investment behavior is whether an increase in human capital increases or decreases wage risk (Levhari and Weiss, 1974).

The conventional wisdom, dating back to Mincer (1974), is that, from looking at the unexplained wage variation, education seems to be associated with increased wage variability. Against this evidence stands a host of other indicators that point towards the conclusion that investments in human capital may rather reduce earnings variation. Remaining within the empirical earnings literature, a typical observation is that educated workers are more likely to receive further training; training in turn generates specific human capital which tends to create employment stability and hence stable earnings (see e.g. Chapman, 1993). Relatedly it is frequently argued that more educated individuals are likely to face less uncertainty regarding match-quality when contracting with employers by the fact that more information about them is available.

More generally, the time unit over which variability is measured may be critical since an individual's wage changes over time. One branch of the literature considers the risk of being 'low-paid'; indeed, recent evidence would suggest that education can be instrumental in helping an individual to avoid becoming low-paid and also to 'escape' from low-paid jobs (Stewart and Swaffield, 1999).

However, there are also other sources of earnings variation which human capital can be expected to affect. These include lost earnings due to unemployment, sickness, disability, etc. Looking at unemployment risk for example, one of the most firmly established facts is that more highly educated people are unemployed to a smaller extent. Hence education reduces unemployment risk.<sup>2</sup> The same seems to apply to other sources of earnings losses such as occupational injury risks.<sup>3</sup>

Thus although the evidence regarding the impact of human capital on wage and earnings risk is conflicting, it appears reasonable to conjecture that education can reduce earnings risk, in particular if one adopts a broad definition of earnings uncertainty. Moreover, the risk characteristics of human capital matter from a policy point of view. Governments are engaged in providing insurance against earnings uncertainty through complex systems of taxation and social insurance,

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<sup>1</sup>Card (1999) in his discussion of the empirical literature on the returns to education notes that a simple Mincer specification with education and experience as explanatory variables can usually explain 25–30 percent of the observed earnings variation.

<sup>2</sup>See e.g. Nickell and Bell (1997) for an international comparison and some recent trends.

<sup>3</sup>See e.g. Hamermesh (1999) (and the references cited therein) who notes that the increased inequality in measured earnings in the US during the last decades has been paralleled by a simultaneous increase in the inequality in the incidence of occupational injury risks.

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