7. UNEMPLOYMENT AND RETURNS TO EDUCATION IN EUROPE[1]

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7.1 Introduction

Rates of return to education give synthetically a measure of the net benefits associated with investment in further education. Costs and benefits from that investment depend on the increased earnings obtained in the labour market when the individual attains a higher level of education. Therefore, expected wage would be a crucial part of the individual's decision. However, in situations of high unemployment, like the European case, that expected wage should be weighted by employment expectations. Casual evidence but also survey results seem to show that employment expectations play a non-trivial role in the educational investment decision. Moreover, under conditions of low wage flexibility, unemployment differentials should play a more important role in the formation of the individual expected wage.[2]

If individuals internalise unemployment in their decisions on further education, this implies that rates of return to education should be adjusted by employment expectations and unemployment benefits, if we are to explain the demand for further education. The objective of our research is to analyse the impact of including unemployment on the estimated rates of return.

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[2] See Guiso et al. (1998).

A wide empirical literature exists showing a significant effect of unemployment on educational demand both in macro and micro models. Nonetheless, the work addressing the effect of unemployment on the rate of return is rather scarce. In this context, some contributions should be mentioned, though. Nickell (1979) adjusts rates of return by introducing unemployment because "we shall be underestimating the private rate of return to the extent that the individual will only be in receipt of those earnings for some proportion of the time where the proportion is directly related to schooling" (Nickell 1979, S126).[3] Groot and Oosterbeeck (1992) and Wolter and Weber also estimate the effect of unemployment on the level of rates of return to education[4], while Asplund et al. (1996) reformulate the earnings equation to allow for the introduction of unemployment.[5] In all these cases, when unemployment differentials are taken into account, returns to education increase, in general, at all levels.

In fact, it is quite surprising that, while the number of papers devoted to the calculus of rates of return to education is really impressive[6], studies of the impact of unemployment on it are so scarce.[7] Our aim is to contribute to the discussion on the relationship between unemployment and education by using an approach in line with that of Nickell, Groot and Oosterbeek, Wolter and Weber, and Asplund et al.; that is, by introducing the employment probability and unemployment benefits as determinants of the level (and relative position) of the marginal rate of return to schooling. The effect cannot be

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[3] Nickell found that after correcting for unemployment, the pre-tax weekly income rises by 0.6 percentage points (from 8% to 8.6%). When after-tax income and unemployment benefit are considered, the impact is lower and very small (0.1 – 0.2 percentage points).

[4] Their study limits this approach to 35–45 year-old men. It is worth noting that Weale (1993), while signalling the potential sources of a downward bias in the value of rates of return, points out primarily unemployment differentials: "Obviously, any assessment of the benefits of education which compares the remuneration of different types of employed labour, and neglects the differential probability of unemployment, will normally understate both private and social returns to education" (Weale 1993, 732).

[5] They introduce unemployment by defining *basic earnings* as the product of the wage rate and the *expected* number of hours worked.

[6] Blaug states that "Calculations of the rates of return to invest in formal schooling have proved to be the bread-and-butter of the human capital research program: literally hundreds of such studies have now been carried out around the world in both developed and developing countries..."(Blaug 1992,16).

[7] Psacharapoulus ("Mr. Rate-of-Return himself", Blaug 1992, XII) treats the unemployment effect on rates of return indirectly when he considered the differences between incidence and duration, and graduate unemployment as a result of a "job-search" process (Psacharapoulus 1981). The surveys on rates of return by Psacharapoulus and Hinchliffe (1973) and Psacharapoulus (1985) have no mentioning about this topic. Mincer (1991) states that while the wage structure by education has generated an impressive amount of research, less effort has been devoted to mobility and unemployment aspects of education.

determined theoretically. Most of the empirical evidence, however, gives support to the idea that unemployment increases the return to education.

7.2 Methodology

One problem with educational returns resulting from the Mincerian equation is that their estimation does not introduce other factors, apart from schooling, in the investment decision.[8] In this common approach, the only *benefit* considered is the change in expected earnings while foregone earnings from the schooling period are the costs taken into account.[9] In addition to factors like family background and/or financial constraints, other important aspects that may influence the individual's investment decision in schooling are the probability of being employed and the increasing risk of further education implied by the growing spread in wages at higher levels of education.[10]

A procedure that allows the introduction of some of these aspects is the so-called "*elaborate method"* (Psacharopoulos 1981). This implies the calculus of a rate of return that equals the opportunity costs and the expected life-cycle earnings. While differences in the value of the rates of return obtained by a Mincerian wage equation and by the elaborate method should not occur, the latter approach permits some other aspects to be introduced into the decision of schooling that the Mincerian approach cannot account for. Our approach attempts to incorporate in the calculus of the rate of return one additional factor of uncertainty, namely the risk of being unemployed.

7.3 Results

To carry out the analysis, the *internal rate of return* was calculated for fourteen PURE countries (only results for men are shown). For each country a wage equation was

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[8] Layard and Psacharapoulus (1979) extended the traditional model to allow the shape of experience to differ across levels of schooling. They find that the rate of return to training increases by 3.9% for each additional year of schooling. Also see Brunello and Comi (2000) and Chapter 3 of this volume. Asplund et al. (1996) reformulate the Mincerian wage equation to allow unemployment to play a role. This requires longitudinal data or a proxy to them, however.

[9] The model may also incorporate direct costs (books, fees, etc.), but this aspect is not essential here.

[10] See the evidence in Chapter 6 of this volume on increasing wage dispersion within educational groups at higher educational levels in a majority of European countries.

estimated, including two educational dummies[11] and potential experience (and its square). The equations were estimated from samples for 1995 or a year close to it. From the equations, age–earnings profiles by educational level were generated. Using these earnings we were able to calculate the internal rates of return, as shown in Figure 7.1. These are the non-adjusted internal rates of return that, basically, do not differ from the rates obtained from estimating Mincerian wage equations.

Figure 7.1. Non-adjusted internal rates of return in PURE countries, men

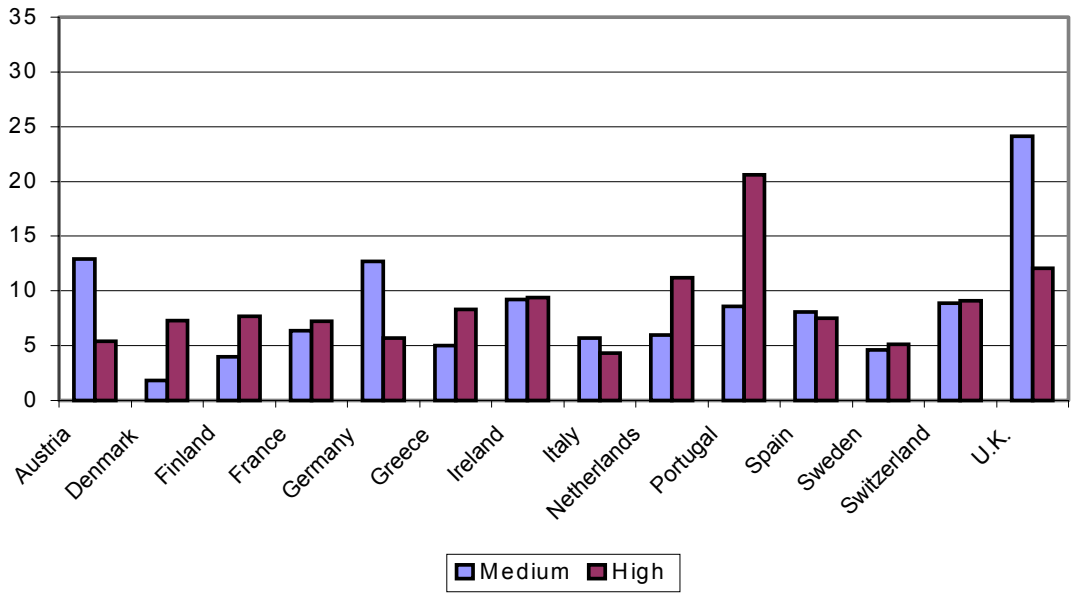
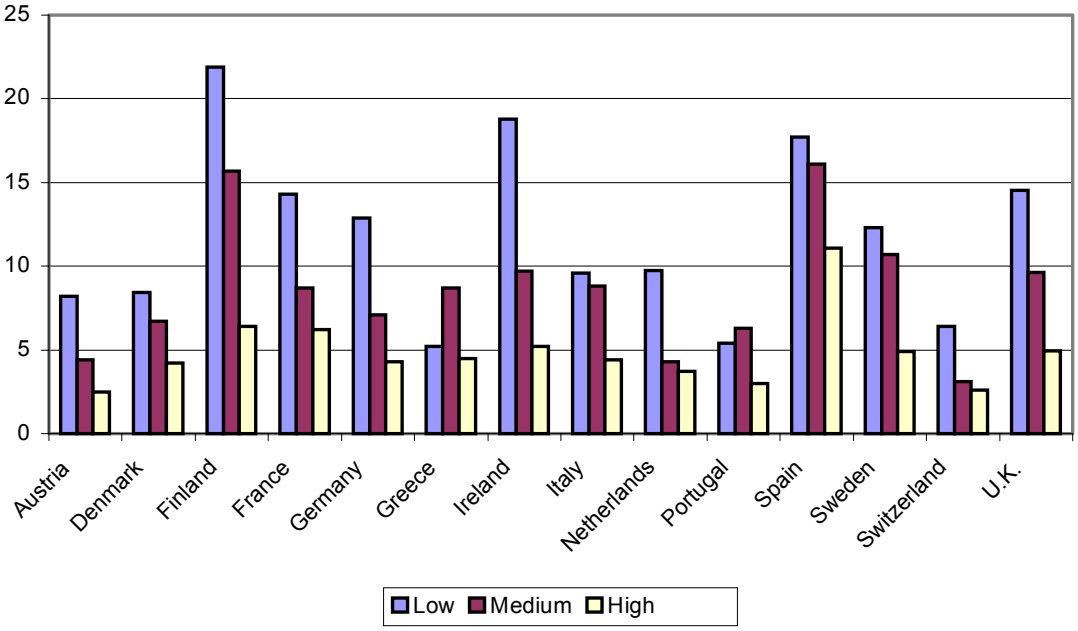


Figure 7.2 depicts average male unemployment rates by educational level for a period that covers most of the nineties. It is easy to recognise the countries with higher unemployment rates, like Ireland and Spain. These two country cases, however, illustrate quite different situations, which are of interest to mention. In the case of Ireland we can see large unemployment differentials especially between low and medium levels, for which this country in fact records the largest differential of all fourteen countries. Conversely, in the Spanish case unemployment differentials between levels are much less important. So, we should differentiate between levels and

[11] In order to homogenise educational levels across countries we used the ISCED classification equivalences with an aggregation into three levels: LOW, MEDIUM and HIGH which crudely approach up to low secondary, upper secondary and tertiary education.

differences between levels. Our point is that what matters are differentials, not levels.[12] We will show this in what follows.

Figure 7.2. Male unemployment rates by educational level in PURE countries



An "adjusted" internal rate of return was then calculated for each country. In this case, age–*expected* earnings profiles were generated, and the predicted earnings for each age–educational level were weighted by the employment rate of the corresponding age–educational level.[13] To this last calculation phase also "the unemployment rate times the unemployment benefit" was added. In this way, for each age–educational level the expected earnings were estimated taking the following form:

$$W^e = W^p * ER + B * UR,$$

where W^e is the expected earnings for each age–educational level; W^p is the predicted earnings; ER is the employment rate (defined as employed over labour force) for that

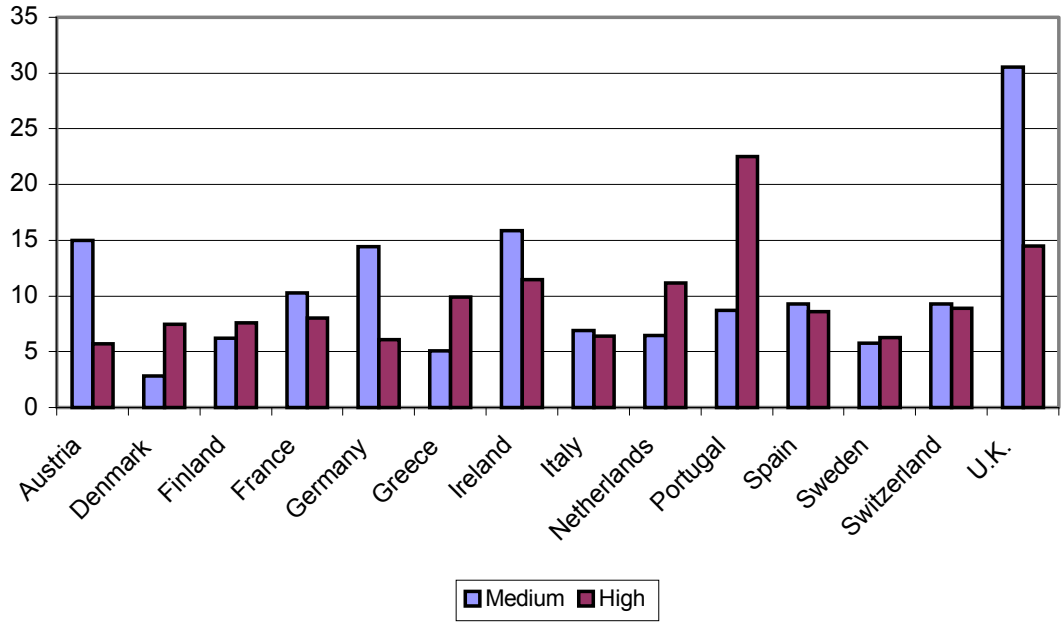
[12] Our work shows that the effects are negligible below an unemployment rate threshold around 7%.

[13] Eurostat provided tabulations for each country of the employment status of the population by educational level and five-year age brackets.

age–educational level; *B* is the unemployment benefit; and *UR* is the corresponding unemployment rate (obviously, *UR = 1 – ER*).

From these, age–expected earnings profiles, flows of costs and benefits were generated in order to calculate an employment-adjusted internal rate of return. The results are shown in Figure 7.3.

Figure 7.3. Adjusted internal rates of return for PURE countries, men



Comparison of the two internal rates of return uncovers the following results:

First, employment adjustment changes the level of returns for almost all PURE countries. Only in nine cases out of 28 is the change less than 0.5 percentage points. Additionally, only in two cases, Finland and Switzerland, there is a minor reduction in returns, for both at the high-education level (–0.1 and –0.2 percentage points, respectively).

Second, the medium-level return is the one that undergoes the larger change in ten of the countries. Employment expectations thus seem to play a more important role in the step from compulsory to non-compulsory education than from medium to higher levels of education. Ireland is the country with the medium-level change being the largest in both absolute and relative terms. At this point it is worth recalling that Ireland is also the country facing the largest unemployment differential between the low and medium

levels. Spain, on the other hand, despite a high unemployment rate is among the countries experiencing a rather small change in medium-level returns.

Third, the higher the unemployment differential between educational levels, the higher is the change in rates of return. Three qualifications should be added to this. The first one is that this relation, as mentioned above, stands out more clearly in passing from low to medium level. A second one is that a notable part of the explanatory effect of unemployment on returns should be ascribed to the age distribution of unemployment. Finally, the unemployment benefit system may outweigh, at least partly, the effect of employment expectations. Obviously, the extent of this effect depends on the generosity of the system.

7.4 Final considerations

Based on these results three considerations can be made:

First, adjusted returns result from the behaviour of unemployment differentials. This aspect should be expected to influence the schooling decision of individuals. Given individuals' imperfect foresight, it seems adequate to assume that expectations about future earnings are likely to correlate with current economic conditions. From this point-of-view, our work can be taken to suggest that the rates of return that individuals or households take into account when making decisions on schooling investment are those adjusted by employment probability and unemployment benefits.

Second, from the perspective of educational policies, in a situation of relatively high unemployment and/or low wage flexibility, the non-adjusted internal rate of return estimated from Mincerian wage equations does not seem always to reflect the real price. The consequence might be misguided policy decisions if an incorrect price is taken as input for those decisions.

As a final point, it should be noted that the proposed methodology to adjust the internal rates of return could provide an input to models that try to determine the optimal length of schooling and its relation to the economic cycle. Experiences of countries like Spain, where the period of high unemployment resulted in a big push in enrolment rates, show that this is a rational response of individuals facing bad or worsening employment prospects.

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