

Private Returns to Education – Lessons from a European Research Project

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Introduction

Investment in education increases the individual's future earnings. This positive correlation between schooling and earnings is well established in the empirical literature.¹⁾

Research on the economic benefit that arises from acquiring a higher education started rather late in Finland. One obvious reason for this was that such analyses require broad individual-level data sets, and these were compiled and made available for research use only in the latter half of the 1980s. Estimates of the private rate of return on investment in education were first published by Ingberg (1987). When averaging over the wide set of estimates reported for various categories of the workforce, based on different definitions of the earnings concept, Ingberg's results point to an average return to education of some 9 to 12 per cent in 1980. In other words, this was the average effect on gross earnings of spending one additional year in school.

This pioneering piece of research work was soon followed by a growing number of studies of the return to education in Finland. Some of these focused explicitly on the educational aspect, while other approached wage determination more generally with schooling being just one of the many background characteristics that show up in the individual wage differentials that can be observed on the labour market. Due to all this research effort, the available evidence on private returns to education in Finland is fairly rich but rather disperse in the sense that the findings are not easily compara-

ble.²⁾ This is because of profound differences in the data used, the adopted estimation technique, the specification of the wage model actually estimated, and the definition of the included variables. In particular, some studies report on the average return to an additional year of schooling. Other studies explore the average return to the completed degree of education. The use of educational levels instead of number of years of schooling is appealing since then there is no need to assume that the return to education is always the same irrespective of the level at which it is acquired. Of course, using both approaches provides a possibility to test whether the assumption of a linear return to education is reasonable or not.

Weak comparability of the returns to education that have been reported over the past years is not merely a Finnish phenomenon, though. A huge variety in results is common to all countries for which private rates of return to education have been estimated, and for much the same reasons as in Finland.

A closer inspection of the Finnish evidence reveals, however, that if overlooking very low and very high estimates, a majority of the reported average returns to education falls in the interval 8 to 9 per cent over the period 1980–1994. For men, the average return to one extra year of schooling has been closer to 9 per cent, while for women it has been closer to 8 per cent.³⁾

Is this a high return? Does it provide enough incentives for people to invest also in a longer education? These important questions are not easily answered. Occasionally it has been sug-

¹⁾ See the literature reviews in e.g. Asplund and Pereira (1999).

²⁾ For a review, see e.g. Asplund (1999).

³⁾ See Asplund (1999, Table 1).

gested that the return to education should be compared to the return on investment in physical capital. Another suggestion has been the market rate. Using either of these returns as a benchmark for evaluating whether the return to education is satisfactory or not, is not without problems, though. The attention has therefore turned to the returns on investment in education that prevail in other countries. Comparing rates of return to education across countries without recognising all the underlying factors that may impair such straightforward comparisons is not to recommend, however, albeit also such exercises have sometimes been undertaken.

In more recent years, several attempts have been made to produce comparable country-specific information on returns to education. A drawback is that most of these studies concern only two countries, occasionally three countries, seldom four or more countries. One of these rare exceptions was a four-country study of individual wage differentials in the Nordic labour markets, published in 1996.⁴⁾ A main finding of this study was that the average return to an extra year of schooling turned out to be substantially higher in Finland than in the other Nordic countries. Indeed, the estimated return to education for Finland was found to be very close to that obtained for the UK when using a comparative approach. This was a surprising result in the sense that the private return to education can be expected to be the higher, the higher is the students' own financing of their education. And in this respect, the difference between Finland and the UK is considerable, as is evident from the statistics compiled by the OECD.⁵⁾

As a consequence there has been a great demand for comparative evidence on private returns to education for a broader set of countries. A major objective of a recently completed European-wide research project was to fill this

obvious gap in the empirical economics of education literature. Among the multitude of research results produced within the framework of this EU-TSER funded project, *Public funding and private returns to education – PURE*, is comparative information on levels and trends in average returns to education for 15 countries. The countries involved in the project were Austria, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK, with Finland as the co-ordinating partner.⁶⁾ The rest of this article provides a brief summary of the main findings of the project.

Notable Differences in Returns to Education

For each country the average returns to education were estimated from a simple Mincerian wage equation using as comparable national individual-level data sets and variable definitions as possible. The choice of the simple Mincer wage equation as the basic model was dictated by the aim of maximising the comparability of results across countries. In this basic model, individual gross hourly wages were regressed on the individuals' completed years of formal education and their potential work experience (and its square).⁷⁾ When measured in this way, work experience reflects the number of years that the individual could potentially have been in working life when considering his or her age and years of schooling. Thus the potential work experience is calculated as age minus years of schooling minus school starting age (commonly 6 or 7). The advantage of using hourly wages instead of annual, monthly or weekly earnings is that individual differences in months and hours worked can be properly accounted for. This basic model was estimated separately for men and women, and for as many years as possible.

The gender-specific average returns to education estimated for the 15 European countries

⁴⁾ Westergård-Nielsen (1996).

⁵⁾ See the various volumes of *Education at a Glance*.

⁶⁾ Information on participating countries, objectives of the project, publications and work still in progress can be obtained at the project's website www.etla.fi/PURE.

⁷⁾ It might be worth noting in this context that adding other wage-relevant variables to the model changes the estimated return to education only marginally. The only exception is occupation, the addition of which usually makes the schooling effect drop by about one-half. This goes back to the strong correlation between the individual's completed education and occupational status. For more details, see Harmon et al. (2001).

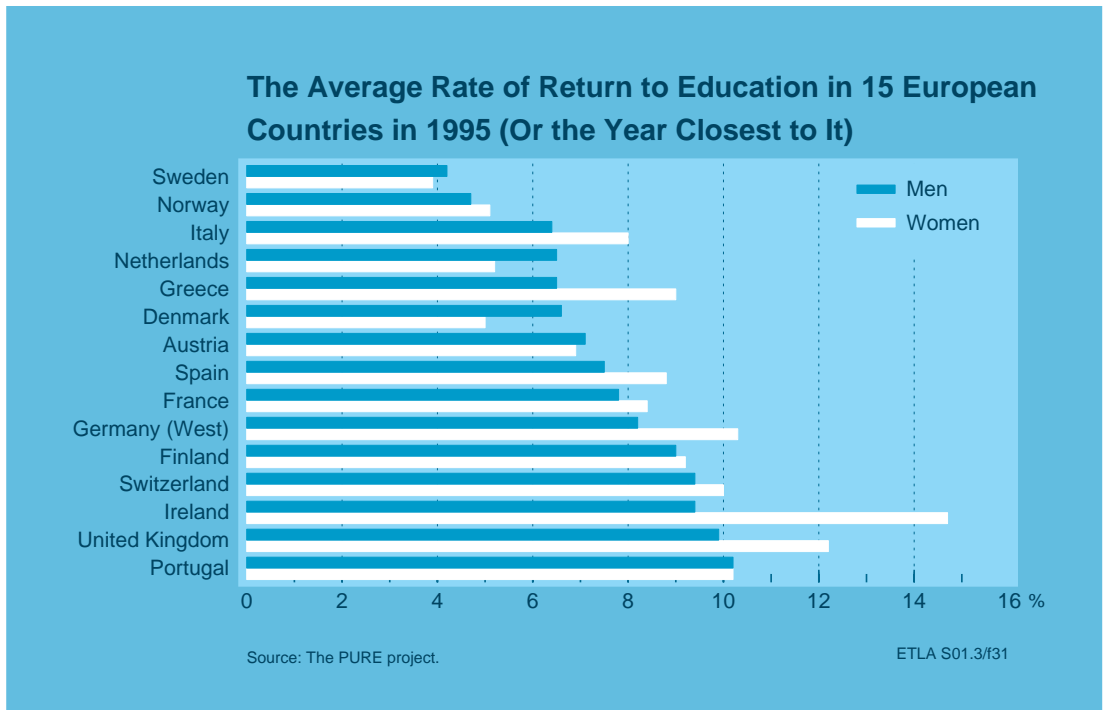
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involved in the project are displayed in figure below.⁸⁾ The results refer to the year 1995 or the year closest to it. The figure reports on the average return to an additional year of schooling with the countries ranked according to the size of the average return of men. The conclusion can only be one: the economic benefit that individuals reap from their investment in education differs considerably across Europe. Among men, the highest average return to education is obtained for Portugal, and the lowest for Norway and Sweden. The difference between Portugal and Sweden is around six percentage points. Opposite to the other Nordic countries, Finland belongs to the top ranking countries of Switzerland, Ireland, the UK and Portugal.

The differences in educational returns are even larger between European women. Irish women face an average return of close to 15 per cent. Again the lowest returns appear in Norway

and Sweden, now joined by Denmark. The gap to Ireland is over 10 percentage points. Finland, in contrast, manages almost equally well in the female as in the male comparison.

The figure also reveals that in some countries, the average return to an additional year of schooling is very similar for men and women. The gender gap in returns is smallest in Sweden, Norway, Finland, Austria and Portugal. The average return of men exceeds that of women only in Denmark and the Netherlands. The reverse situation prevails in Italy, Greece, Spain, Germany, Ireland and the UK. The main reason for this last-mentioned outcome is simple, though. All six countries are characterised by a rather low labour market participation rate among women, implying that the category of women actually working is quite selective. A common feature is, among other things, a fairly high education. An increasing participation rate of women in these countries would mean a



⁸⁾ The numbers displayed in the figure measure the percentage effect on (gross) hourly wages of an additional year of schooling. These numbers are calculated by taking the anti-log of the parameter estimate of the schooling variable, that is, $100 \times (e^{\text{estimate}} - 1)$.

flow of less educated women into working life and thus, most probably, also a decline in the average return to education of women.⁹⁾

On the whole, the European countries seem to fall into three main groups: countries with a low average return to education (the Scandinavian countries and the Netherlands), countries with a high return to education (Ireland and the UK), and countries that fall in-between these two extremes.

No Convergence of Returns to Education

Comparing the trends over time in the average returns to education estimated for the 15 European countries shows no signs of a convergence across Europe. Some countries have experienced a downward trend in rates of return, others are characterised by an upward trend, while still others display no time trend whatsoever. Furthermore, within some countries the trend differs for men and women.

A downward trend in the average return to education for both men and women can be observed in three countries, that is, Austria, Sweden and Switzerland. However, despite a common trend, the size of the decline in returns reveals considerable variation across the countries. In Austria the change has been from a relatively high return to a relatively low return, whereas in Sweden the shift has been from a low return to an even lower return.

In Denmark, Italy and Portugal, on the other hand, the average return to education shows an upward trend for both genders. The shift goes from a very low return to a medium return in Denmark (men) and Italy (women), while in Portugal the return has increased from a relatively high level to an even higher level.

For the rest of the investigated countries no clear-cut time trend can be detected. In some of them the average return to education shows an opposite trend for men and women. Finland, for instance, belongs to this latter category.

Some Further Education-Related Findings

Apart from extensive analysis of levels and trends of educational returns, various related topics were also explored in detail. Some of the main findings of these studies are briefly presented below.¹⁰⁾

Separate analysis of the wage differentials between college-educated and high-school educated employees, the so-called college wage gap, also points to considerable variation across the investigated countries. Substantial cross-country differences occur both in the absolute level of the college wage gap and in its development over time and cohorts. Specifically, the growth in the college wage gap has not been restricted to the younger cohorts, as stated in previous (mostly US and UK) studies. On the contrary, in a number of European countries the college wage gap has grown at an even faster rate for the older cohorts.

Evidence produced for a limited number of European countries indicates that by investing in education individuals do improve their productivity in working life, as stated by the human capital theory. But investments, especially in higher education, also seem to provide them with a signal to employers about their innate productive capabilities, as predicted by the so-called screening hypothesis. The productivity-enhancing effect of educational investments still dominates the empirical scene, though.¹¹⁾ An important implication of this outcome is that public funding – also of higher education – can be argued to be well justified also from a societal point of view.

Throughout Europe social groups that commonly acquire little education face a potentially higher than average return to education. Thus it would be of considerable importance to identify these groups and to provide them with incentives to continue in school.

Equally important, improving the educational attainment level of the less educated can be expected to reduce wage inequality, since education is shown still to contribute substantially to the wage differences that prevail in the Europe-

⁹⁾ For more details, see Harmon et al. (2001).

¹⁰⁾ For more details, see the final report of the PURE project (Asplund 2001) and the references therein.

¹¹⁾ See Barceinas-Pareda (2001) and Skalli (2001).

an labour markets. Further support for this conclusion is provided by the finding that a higher education not only secures the individual a higher entry wage, but also guarantees a more advantageous life-cycle wage profile as compared to the less educated. Simultaneously it is, however, of importance to recognise that there are also wage inequality related factors that potentially may work in the opposite direction. Among these factors are the concomitant development of within-group wage inequality and the balance between supply and demand of educated labour.

Thus, reduced between-educational-level inequality is a necessary but not a sufficient condition for overall wage inequality to decline due to more people acquiring a better education. A further condition is that within-educational-level inequality decreases with the educational level. Put differently, the dispersion in wages should be larger among the less educated than among the higher educated. The results for the great majority of European countries point in the opposite direction, however; that is, within-educational-level wage differences tend to be the higher, the higher the educational level. In other words, the differences in the economic benefit that individuals manage to gain from their investment in education are found to increase rather than decrease when moving up the educational scale. This means that the link between educational expansion and wage inequality is not so straightforward as is often claimed in the political debate. This within-educational-level inequality may seriously mitigate or even outweigh the decline in overall wage inequality that is commonly expected to arise from an improved educational level of the population and the workforce.

Moreover, this European-wide finding of rising wage dispersion with the educational level, reveals the presence of a notable wage risk associated with further education. The European labour markets are, in other words, characterised by considerable uncertainty with regard to the actual return that individuals can get from their investment in a higher education. The obtained results further suggest that returns are riskier (more dispersed) the higher the country's average return to education. Presumably this schooling-level correlated wage risk also affects individuals' incentives and decisions to invest in higher education.

Other aspects of crucial European importance that are likely to influence individual schooling decisions are employment prospects (the risk of becoming unemployed) and unemployment benefits. Accordingly, attempts should be made to adjust "conventional" rates of return to education for these realities. Undertaking such adjustments changes the return to education very differently for the investigated countries. This outcome, of course, reflects cross-country differences in unemployment between educational levels but also in the generosity of the unemployment benefit system. Moreover, the minor difference between the adjusted and unadjusted rates of return to education that is observed for some countries, including Finland, is simply the outcome of the benefit system more or less outweighing the better employment expectations that are usually associated with a higher education.

Why Do the Returns to Education Differ Across Countries?

Attempts were also made to look for major explanations to the obtained differences in educational returns across countries. There are several potential candidates. A higher supply than demand of educated labour is likely to depress the return on investment in education, while the reverse situation would increase the competition for well-educated people and thus would add to employers' willingness to pay an extra reward to attract such labour. In addition to the supply–demand interplay, also the prevailing labour market institutions may affect the pay differentials between differently educated labour. It is a well-established fact that centralised bargaining and a high unionisation degree result in a more compressed wage structure. In addition, cross-country differences in the system of public support for costs of education to individuals and in admission rules can be expected to affect private returns to education as well. This holds particularly for higher (tertiary level) education.

Europe has seen an enormous expansion in public funding of higher education, especially in the 1990s, which resulted in a substantial growth in the supply of highly educated labour. The real value of public expenditure on higher education grew by more than 80 per cent at the European level between 1980 and 1996.

Over the same time period the supply of labour with a higher education relative to those with a secondary or lower education roughly doubled. Nevertheless the relative wages of highly educated employees have displayed an increasing rather than a decreasing trend when aggregating over all 15 countries under study. The reason for this is obvious: aggregate demand for highly educated labour has expanded at an even faster rate. While the calculated shift in aggregate demand for highly educated labour amounts to almost 6 per cent per year, the shift in aggregate supply remains just under 5 per cent per year.

Turning the analysis to the single countries reveals, however, notable cross-country variation both in the level and the growth rate of public expenditure on higher education. In particular, countries having started from a lower level show higher growth rates, which has resulted in a clear convergence in the relative supply of differently educated employees across Europe. Nevertheless the differences between countries in the educational composition of the labour force are still substantial, though. Also the trend in the demand for highly educated labour displays conspicuous variation across countries, albeit demand has risen at least as much as supply in 11 of the 15 countries investigated. These differences in supply and demand, coupled with marked differences in la-

bour market institutions, are without doubt important factors underlying the observed variation in levels and trends of average returns to education across Europe, and consequently also in wage inequality.

A more thorough examination of the enrolment into higher education provides further support for increased public expenditure on higher education exerting a strong positive impact on the supply of highly educated labour. In addition to public funding, also entry exams in the high-school system as well as tuition fees are detected to influence enrolment. In contrast, current returns to education and current unemployment rates for younger age groups seem to leave current enrolment into higher education unaffected. This European-level finding of enrolment into higher education being rather insensitive to the rewarding of education in the labour market as well as to youth unemployment may, of course, conceal even considerable variation across the single countries. Especially in countries with a very low return to education, there is an obvious risk that a growing number of youths decide not to invest in higher education.

Finally, attempts to explain differences in public expenditure across countries as well as within countries over time reveal that especially government ideology but also the type of government have played an important role.

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