The Dynamics of Wage Distribution in Europe
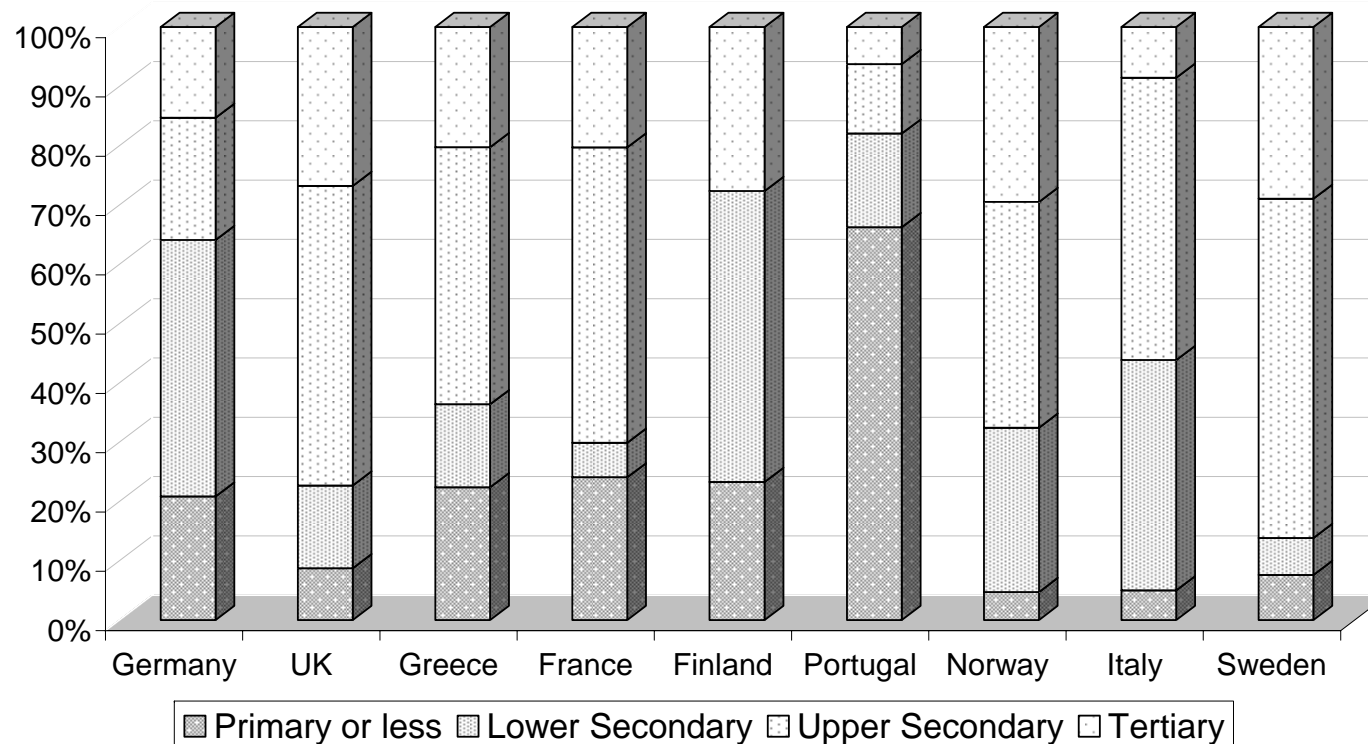
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- Some stylized facts
- The Quantile Regression
- Results from EDWIN
  - The case of one country
  - General Results
- Some policy Implications

Some stylized facts

- Education composition – the education attainment of the European population is very different among countries - just look at Portugal and Norway

Gini index by education groups – the inequality seems to increase with education
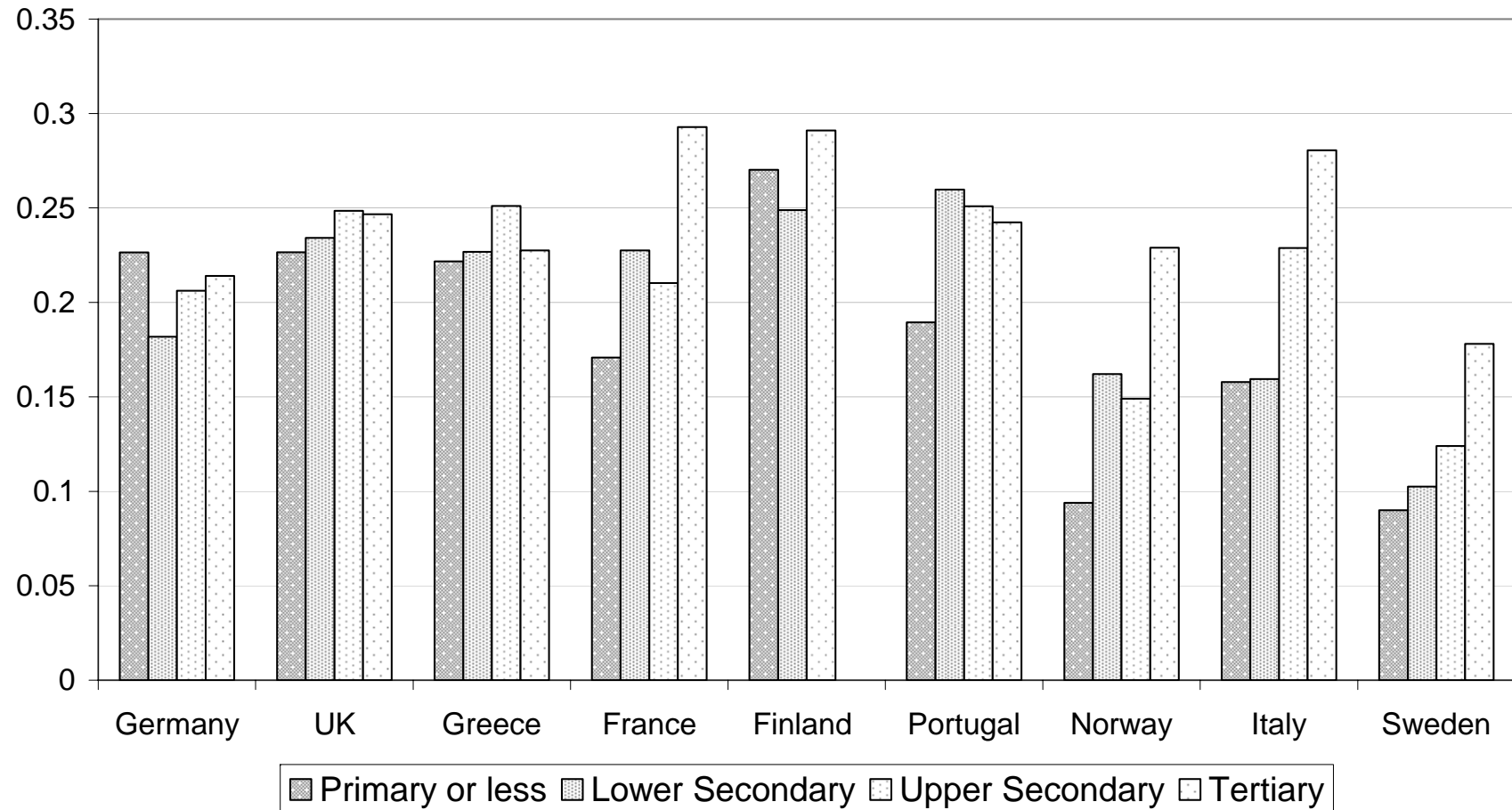
W90/W10 ratio by education groups – the same inequality result is obtained when comparing the wage at the 9 decile with the one at the first decile.
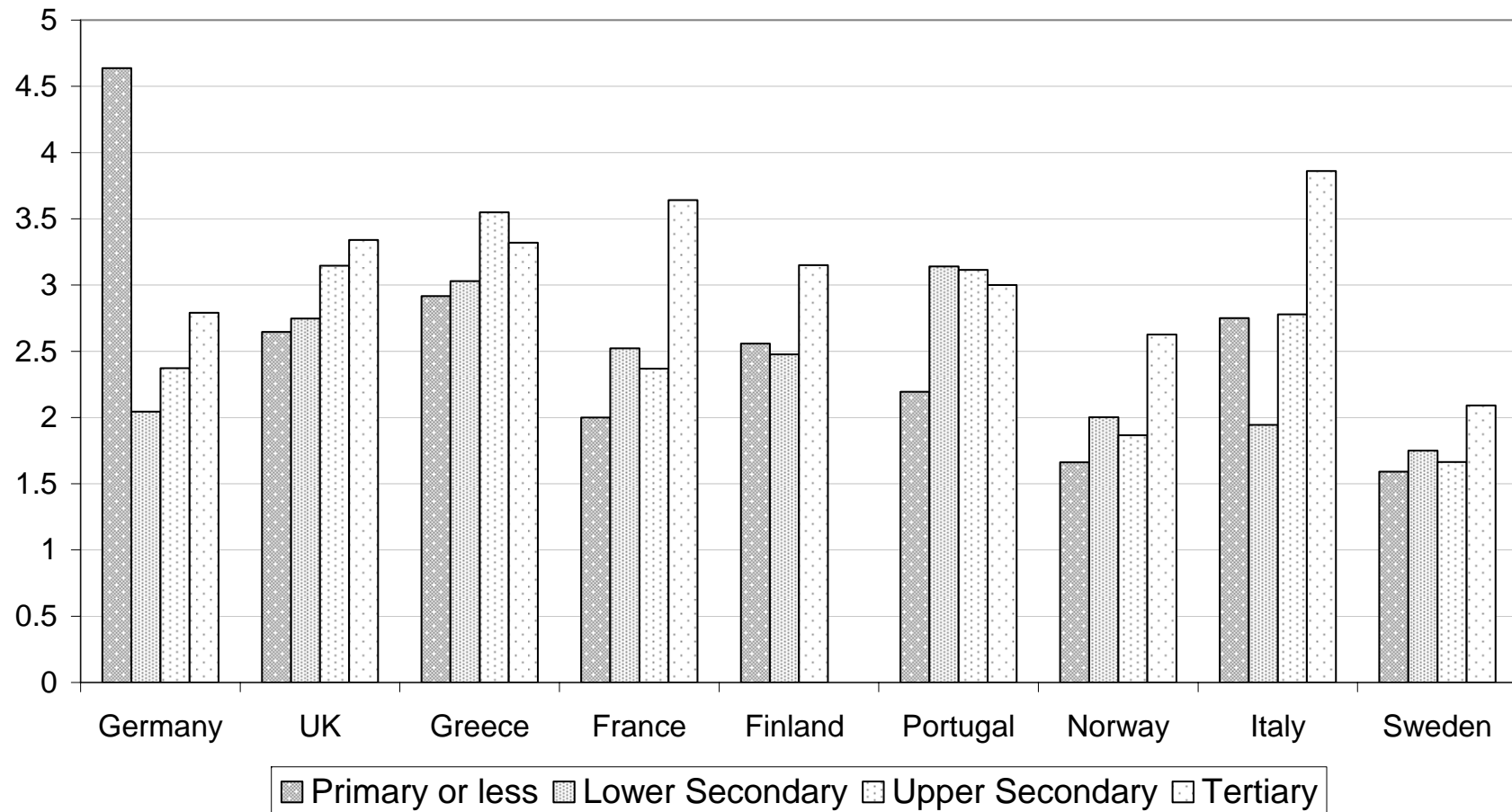
OLS Estimation – gives the average return to education
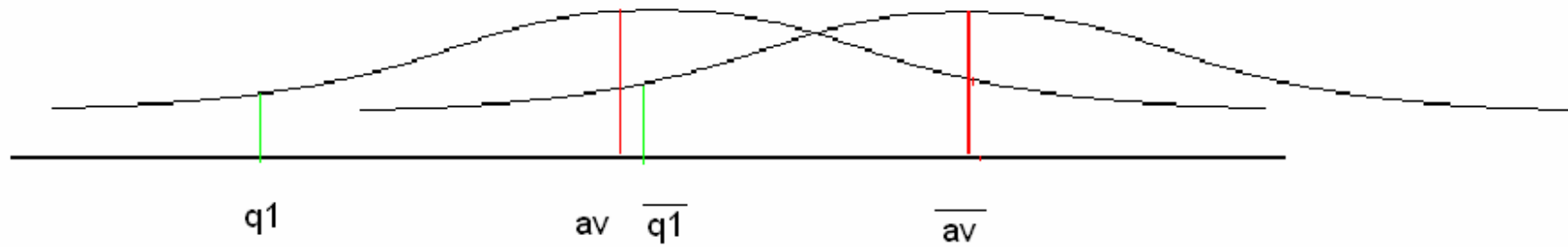
Is OLS a good estimation method ? – a counter example

Graph 2.1 - Distribution of hourly earnings, Portugal, 1995, Men and Women
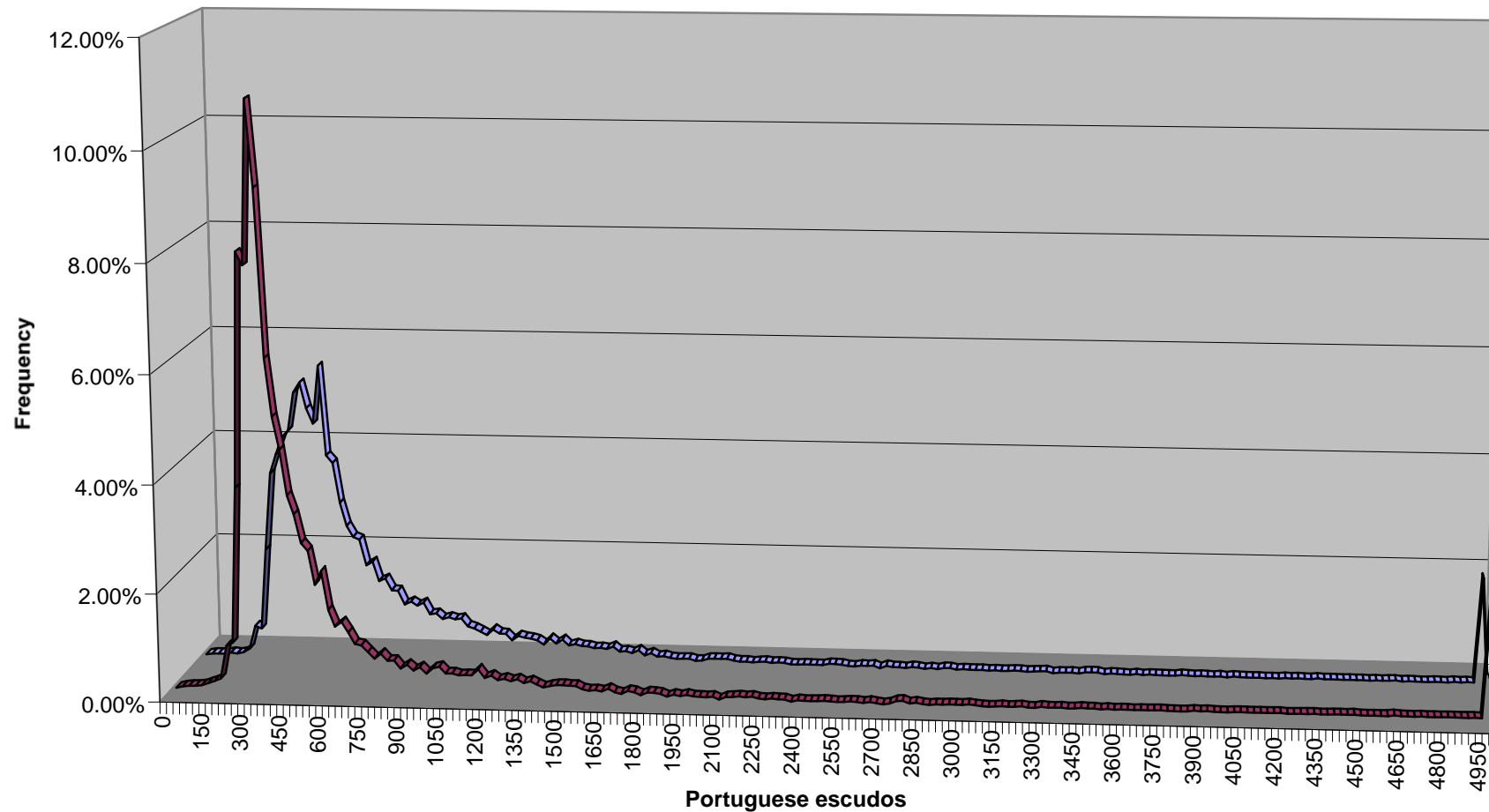
Quantile Regression
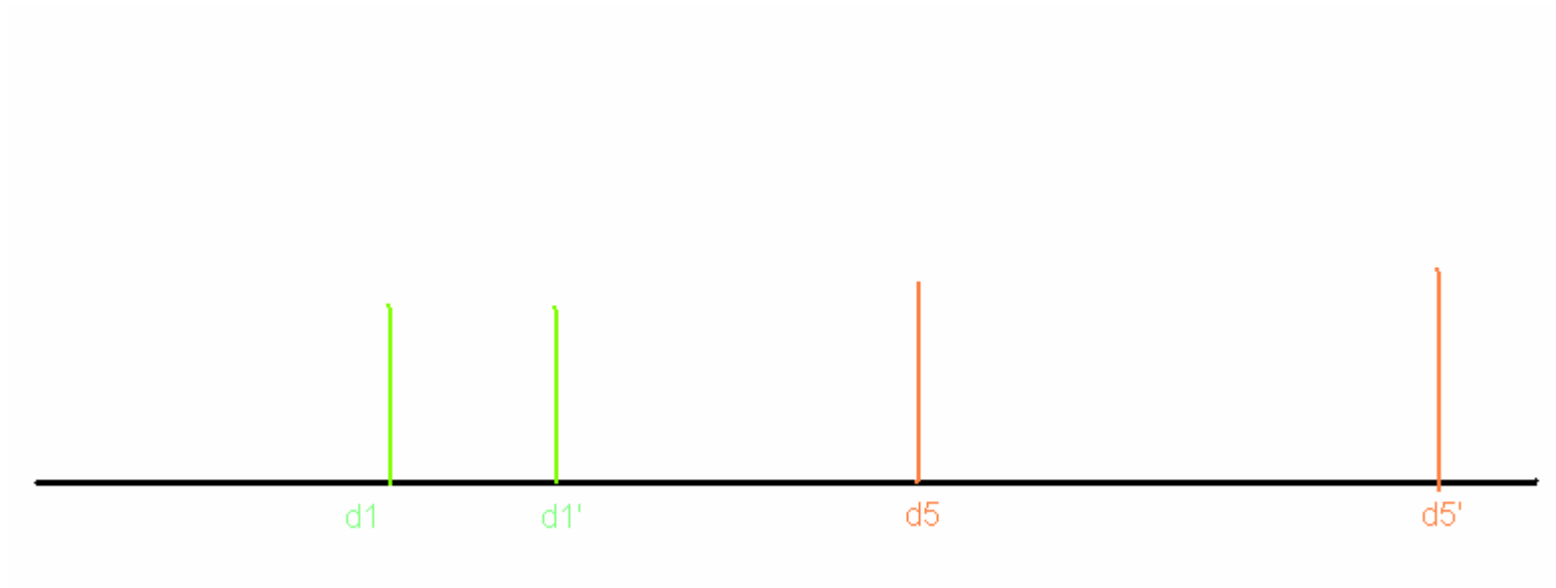
- Education, rather than assuring a certain levels of earnings, gives access to a DISTRIBUTION of earnings.
- Such a distribution has a certain mean but at the same time has a certain dispersion.
- We have two dimensions of the education induced inequality:
  - The inequality between those who have a certain level of education and those who have not. We call it the between group inequality.
  - The inequality among those who have the same level of education – the within group dimension of inequality.

- Within-groups dispersion is a measure of the wage uncertainty attached to the educational investment. It is important for prospective students (and policy makers!) to know not only average returns, but also the dispersion.

National datasets

| Country	Data source	Period covered	Final number of observations in the last available year	Comments
Germany	German Socio-Economic Panel (GSOEP)	1984 – 1999	1,895	Schooling levels correspond to: 1 = no vocational education, 2 = basic vocational education, 3 = intermediate education, 4 = tertiary.
UK	Labour Force Survey (LFS)	1994 – 2003	14,642	
Greece	Household Budget Surveys (HBS)	1974 – 1999	1,885	Net wages, no distinction between the public and the private sector
France	Labour Force Survey (LFS)	1990 – 2001	21,142	
Finland	Labour Force Survey (LFS)	1984 – 2001	5,590	Change in the educational categories in 1998. From then onwards, only three education levels are available, which are not directly comparable to the previous ones.
Portugal	Labour Force Survey (LFS)	1993 – 2000	5,738	Net wages, no distinction between the public and the private sector before 1998.
Norway	Level of Living Surveys (LLS)	1983 – 2000	974	
Italy	Survey of Household Income and Wealth (SHIW)	1989 – 1998	2,116	Net wages
Sweden	Level of Living Survey (LLS)	1981 – 2000	973	Monthly wages are net, but hourly wages are in gross terms.

Edwin results

The case of Portugal as an example

General results

Portugal
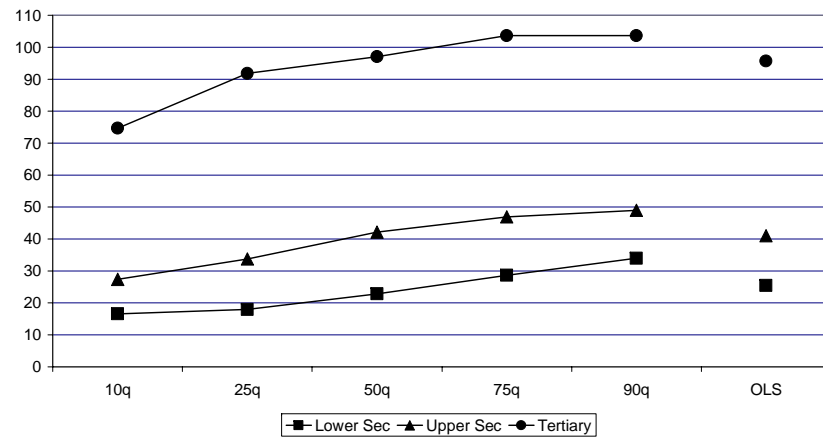
- Returns increasing with quantiles
- High returns to tertiary education
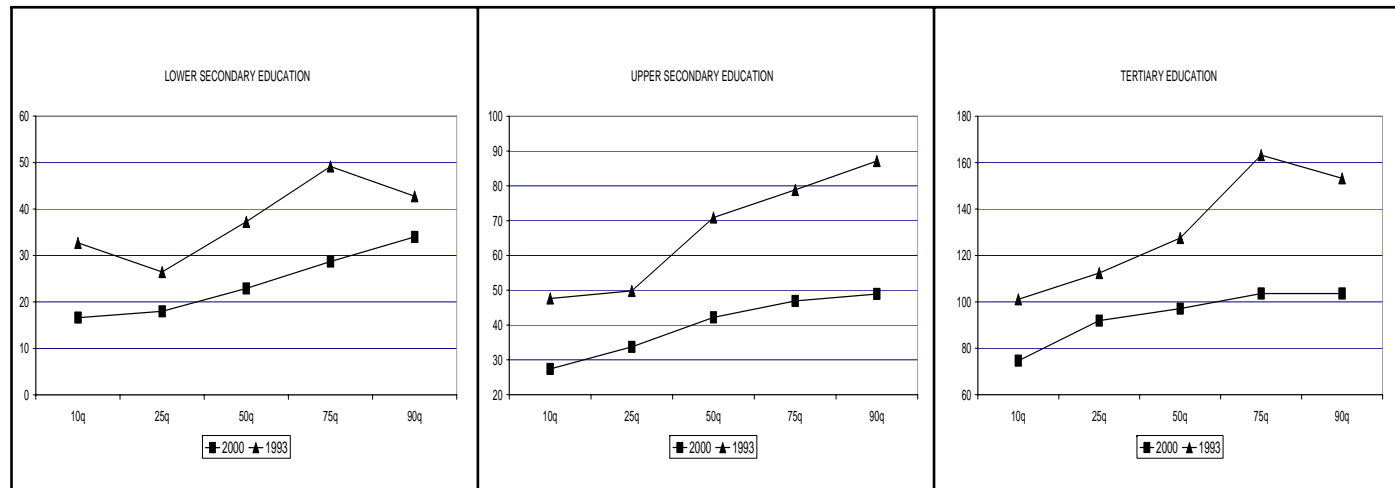
- **Portugal (1993-2000)**
- Over the sample period, wage inequality decreased between and within groups simultaneously in upper secondary and tertiary. The wage premium earned by lower secondary, upper secondary and tertiary workers fell from 38%, 69% and 128% in 1993 to 23%, 42% and 97% in 2000, respectively.
- This process was more severe among workers at high-pay jobs, contributing to reduce the upper tail of the earnings distribution. As a result, the 90q-10q spread decreased, from 39% to 22% in the upper secondary group and from 53% to 29% in the tertiary group.

Changes in OLS and conditional returns over the last d

		Δ(OLS)	Δ(90q-10q)
Germany (1989-1999)	Lower Sec	-1.23	-3.94
	Upper Sec	5.89	-5.80
	Tertiary	-8.13	9.82
UK (1994-2003)	Lower Sec	4.82	-1.57
	Upper Sec	-1.53	2.03
	Tertiary	-3.10	-1.39
Greece (1988-1999)	Lower Sec	-0.88	7.40
	Upper Sec	8.00	1.39
	Tertiary	14.56	8.10
France (1993-2001)	Lower Sec	-8.38	-1.02
	Upper Sec	-2.34	-4.47
	Tertiary	-9.10	12.96
Finland (1989- 1997)	Lower Sec	2.57	1.59
	Upper Sec	-3.40	3.11
	Tertiary	-11.80	-1.98
Portugal (1993-2000)	Lower Sec	-14.37	7.34
	Upper Sec	-28.06	-17.97
	Tertiary	-35.37	-23.19
Norway (1991- 2000)	Lower Sec	-3.88	9.41
	Upper Sec	1.28	9.88
	Tertiary	10.87	20.44
Italy (1989-1998)	Lower Sec	21.53	11.58
	Upper Sec	25.91	15.62
	Tertiary	37.28	13.86
Sweden (1991-2000)	Lower Sec	-9.48	-9.40
	Upper Sec	-11.99	1.43
	Tertiary	-18.69	-3.45

Similarities and differences across countries in the last 10 years

- OLS results
1. France, Portugal and Sweden - the returns to all education levels decreased over the sample period, contributing towards wage compression.
2. Germany, UK, Finland, Norway and Greece - we find mixed evidence across education levels. In Germany and UK, decreases in the coefficient of tertiary education were accompanied by similar increases in the coefficient of lower or upper secondary education. In these countries, therefore, changes in average returns had an ambiguous effect on wage inequality. In Norway and Finland, changes were relatively larger for the tertiary group. In Norway, the evolution of the coefficient of tertiary education points to rising wage inequality, while the opposite applies for Finland. In Greece only the lower secondary showed a slight decrease.
3. Italy - differences between groups rose over the last decade

- Changes in within-groups inequality
1. Greece, Norway, Italy - wage dispersion rose within all education levels
2. In Portugal – wage dispersion reduced in upper secondary and tertiary.
3. All other countries had changes in opposite signs depending on the level of education

Total change in terms of tertiary education

- Increase in inequality – Greece, Norway, Italy

- Decrease in inequality – U. K., Finland, Portugal and Sweden

- Maybe increase - France

Conclusions

- We found that returns to education tend to be increasing over the wage distribution. This is interpreted as a positive impact of education on within-groups dispersion.
- We differentiated between education levels, and found that tertiary educated workers show much larger wage dispersion than workers with less education.
- As far as within-groups inequality is concerned, this finding suggests that, by raising the weight of the high-spread group, educational expansion towards tertiary education is expected to increase overall wage inequality.
- In turn, an educational expansion from primary to secondary education is expected to have only a modest effect on wage dispersion.

Possible explanations

1. **Over-education - Over-educated workers earn less than their adequately-educated peers, and more than workers who are in the same job but have less education (Hartog, 2000, Dolton and Silles, 2001, Sloane, 2002). Thus, a situation where a proportion of high skill individuals take jobs with low skill requirement and low pay would be consistent with having increasing returns to education over the wage distribution. The rising proportion of over-educated workers in Europe documented in Hartog (2000) would be consistent with observing increasing wage dispersion among the high-educated.**

2. **Ability - If ability interacts with schooling, then returns to education must be higher among workers at high-pay jobs, i.e., with more ability. In those countries where higher education does not function as a screening device, the group of university graduates is rather heterogeneous in terms of ability and, consequently, dispersion in the returns across quantiles is larger.**

3. **Differences in the quality and type of educational qualifications - If certain qualifications or institutions give a better reward in the labour market, then we should expect some degree of heterogeneity in the estimated returns. Differences across time and countries regarding the amount of wage dispersion within groups would be due to different levels of dispersion in the quality and type of educational qualifications.**

Some policy implications

- Equity and efficiency concerns – increase average education can increase inequality → design of instruments aimed at identifying those individuals whose returns to education are lower

- Investment in Education is risky – poor are more risk averse → design instruments to promote education among the more risk averse individuals