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Intergenerational Mobility in Europe: Evidence from ECHP: Part II

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These coefficients are very low if compared to other results obtained for the same countries (see Solon (2002) for a review) but the few studies that use contemporaneous data for fathers and children have results within the same range. Couch and Dunn (1996) with a similar structure of data for Germany find results between 0.08- 0.28 for sons, while Francesconi and Ermisch's results obtained from a British Matched sample with the same structure as mine, range from 0.048 to 0.059 for sons and from 0.067 to 0.070 for daughters.

Excluding those coefficients that are not significant, I can rank countries according to their degree of mobility (1 means a mobile society). As it can be seen, Italy is the most immobile country, together with Portugal and Greece.

Table 3: Daughter-father pairs: $\hat{\beta}$ from random effect estimates of (10) and (11)

Country	OLS Pooled			Father earnings averaged including years of unemployment		
	$\hat{\beta}$	Sample	Mobility Rank	$\hat{\beta}$	Sample (1)	Mobility Rank
Germany	.28 (.073)	890	9	.22 (.059)	955	6
Denmark	.13 (.16)	157	-	.06 (.165)	160	-
The Netherlands	-.053 (.109)	301	-	.034 (.097)	309	-
Belgium	.24 (.13)	129	7	.12 (.143)	135	4
France	.22 (.089)	257	6	.21 (.090)	268	5
UK	-0.04 (.060)	523	-	.024 (.057)	584	-
Ireland	.16 (.039)	631	3	.11 (.033)	714	3
Italy	.27 (.047)	630	8	.22 (.044)	709	7
Greece	.20 (.062)	284	5	.037 (.062)	337	-
Spain	.19 (.049)	686	4	.09 (.035)	818	1
Portugal	.12 (.037)	659	1	.11 (.035)	766	2
Austria	.16 (.054)	562	2	.047 (.058)	581	-

Notes: (1) see table 4

Considering the rank in intergenerational mobility towards women, we can confirm that Italy is the most immobile country, while Portugal and Greece seem more mobile. Germany turns out not to be so mobile as when sons are considered.

From table 2 and 3 it is possible to conclude that there are significant cross country differences within Europe in the degree of intergenerational income mobility. Furthermore, as expected, I find that the earnings elasticity is always lower when children earnings are estimated on averages of father earnings including years of unemployment.

The estimated elasticity is never significant in The Netherlands and Denmark. This means that in my samples it is difficult to identify a significant relation between the two generations' earnings, but I can't conclude anything about the degree of mobility in these two countries.

The observed heterogeneity in the degree of intergenerational earnings mobility among countries begs the question whether these differences can be associated to differences in educational system and institutional setups. I address this question and discuss it in the last section.

5. Educational mobility

A strong positive association between a child school attainment and its parents' has been consistently documented in many empirical studies (see Haveman and Wolfe for a review). The most important among parental characteristics in children educational choice is the human capital of the parents.

In analysing educational mobility I use all the children –parent pairs I can match to have greater sample sizes. I put an age cut-off at 20 excluding younger individuals (possibly still enrolled in school) and I drop those individuals with a missing observation in education. But differences in school leaving ages in the 12 countries may make comparisons unreliable because I have samples with an underestimate proportion of children with a tertiary degree and to avoid this distortion I impute a tertiary degree to children still enrolled in schooling when they are more than 20 years old[11].

In ECHP education is classified in three categories on the basis of the ISCED classification scheme: less than secondary (ISCED 0-2), second stage of secondary level

[11] In all countries the school leaving age from secondary education is between 18 and 19. And if someone is still enrolled after 20 he has an higher probability to get a tertiary degree. Other problems may arise with different rate of drops out from tertiary education by countries.

(ISCED 3) and tertiary level (ISCED 5-7). Many problems arise trying to classified some vocational tracks in countries as Germany and Austria according to the ISCED classification scheme. For example, advanced vocational training is allocated by the OECD to tertiary level even though it is not a tertiary level qualification (and nobody in Germany would consider it as such), since it does not require the "Abitur" (Baccalaureate, or O-level)[12]. In countries where compulsory school lasts until 17-18 years (UK, for examples), the first educational class contains mainly drop-outs from education (a very small sample) while in the second class there is the vast majority of the population that completed compulsory school.

Table 4 : Intergenerational Education mobility: Father and Mother-son pairs.

Country	Transitional educational matrices Father-son					Transitional educational matrices Mother-son				
	Nobs	*eigenvalues (1)*	*rank*	*Pearson's Chi2(2)*	*rank*	*Nobs*	*eigenvalues (1)*	*rank*	*Pearson's Chi2 (2)*	*rank*
Germany	1136	0,095 (0,23)	4	21,98 (0,00)	5	1116	0,052 (0,027)	4	6,54 (0,16)	4
Denmark	329	0,114 (0,54)	5	6,68 (0.15)	2	311	0,033 (0,075)	2	0,45 (0,97)	1
Netherlands	707	0,061 (0,033)	2	8,53 (0,07)	4	690	-0,0055 (0,045)	1	3,61 (0,46)	2
Belgium	546	0,185 (0,053)	8	24,31 (0,00)	6	517	0,135 (0,055)	6	13,23 (0,01)	5
France	1054	0,298 (0,035)	12	77,08 (0,00)	8	1033	0,224 (0,045)	10	70,24 (0,00)	9
UK	637	0,089 (0,061)	3	5,56 (0,23)	1	597	0,136 (0,45)	7	16,39 (0,00)	6
Ireland	1510	0,276 (0,034)	10	85,29 (0,00)	9	1460	0,271 (0,041)	11	94,18 (0,00)	10
Italy	2758	0,210 (0,019)	9	175,14 (0,00)	11	2698	0,167 (0,025)	8	105,01 (0,00)	11
Greece	1568	0,149 (0,020)	6	56,25 (0,00)	7	1545	0,118 (0,027)	5	31,46 (0,00)	7
Spain	2780	0,160 (0,025)	7	164,06 (0,00)	10	2706	0,168 (0,025)	9	63,43 (0,00)	8
Portugal	1626	0,296 (0,043)	11	176,47 (0,00)	12	1587	0,274 (0,060)	12	133,23 (0,00)	12
Austria	884	0,045 (0,044)	1	6,87 (0,14)	3	852	-0,044 (0,053)	3	4,24 (0,37)	3

(1) Standard errors in parenthesis (2) p value in parenthesis

This picture is very different in countries where compulsory school lasts until 15-16 years (Italy); the second class contains individuals with an upper degree, that for the father generation has also an higher market value. That's why in some countries the

[12] And furthermore, educational variable descriptions in ECHP are in original languages.

transitions matrices may not be reliable. But still it is worth to try to analyse education transmission from a generation to the other.

A commonly used method to measure the link existing between educational attainment of father and children is the transitional matrix where the percentage on the main diagonal represents the number of dynasties almost immobile. I compute the country matrices and calculate two synthetic measures, the second eigenvalue and the Pearson's chi-squared, which test the hypothesis that education level of the two generations are independent[13]. The eigenvalues are calculated bootstrapping from the original samples 100 times the matrix, allowing in this way the calculation of the standards errors. The lower is the second eigenvalue the more the society is mobile. The lower is the Pearson's Chi2 test, the more independent is the level of education of the children from their parents'.

Table 5 : Intergenerational Education mobility: Father and Mother-daughter pairs.

Country	Transitional educational matrices Father-daughter					Transitional educational matrices Mother-daughter				
	Nobs	*eigenvalues (1)*	*rank*	*Pearson's Chi2(2)*	*rank*	Nobs	*eigenvalues (1)*	*rank*	*Pearson's Chi2(2)*	*rank*
Germany	811	0,082 (0,031)	4	14,34 (0,00)	6	796	0,061 (0,030)	5	6,38 (0,17)	6
Denmark	277	0,071 (0,067)	3	4,61 (0,33)	2	266	0,145 (0,078)	8	5,64 (0,22)	5
Netherland	597	0,061 (0,043)	2	5,28 (0,26	3	584	-0,023 (0,051)	1	2,69 (0,61)	3
Belgium	431	0,085 (0,104)	5	8,87 (0,06)	4	401	0,059 (0,074)	4	2,67 (0,61)	2
France	900	0,146 (0,037)	8	16,24 (0,00)	7	880	0,102 (0,052)	6	27,1 (0,00)	7
Uk	507	0,051 (0,052)	1	1,66 (0,78)	1	477	0,034 (0,056)	3	0,66 (0,95)	1
Ireland	1263	0,293 (0,035)	12	71,42 (0,00)	10	1224	0,292 (0,047)	11	85,33 (0,00)	12
Italy	2215	0,152 (0,020)	9	90,72 (0,00)	11	2176	0,126 (0,025)	7	55,63 (0,00)	9
Greece	1246	0,117 (0,031)	7	31,78 (0,00)	8	1228	0,159 (0,023)	9	35,52 (0,00)	8
Spain	2312	0,170 (0,028)	11	126,45 (0,00)	12	2246	0,194 (0,024)	10	62,61 (0,00)	10
Portugal	1313	0,169 (0,042)	10	58,77 (0,00)	9	1276	0,303 (0,053)	12	66,82 (0,00)	11
Austria	693	0,108 (0,066)	6	12,12 (0,01)	5	671	0,029 (0,046)	2	4,55 (0,33)	4

See table 6.

[13] The matrices are available from the author upon request.

Economic and sociologic literatures in intergenerational mobility agree in considering mother's human capital more closely related to the attainment of the child than that of the father. Table 4 and 5 present results for mother-son and mother-daughter pairs. The two indexes are highly correlated, in fact we have a correlation of 0.7 between father-children Eigenvalue and Pearson, and a correlation of 0.83 for mother-children indicators.

Ireland, Italy, Portugal and Spain are the most immobile countries in education in every measure of mobility. Italy and Portugal are also the European countries with the lowest level of tertiary educational attainment in the population and their intergenerational earnings elasticity is relatively high: in these two countries, few people have a tertiary degree and they seem to transmit this high level of education to their offspring while upward mobility is still limited. France is immobile as regards the education of sons but more mobile for daughters.

The observed heterogeneity in the degree of intergenerational educational mobility among countries begs the question whether these differences can be associated to differences in educational system and institutional set-ups. Looking for explanatory factors at the cross-national and statistical level is a complex exercise but still it is worth trying and I address this question and discuss it in the last section.

6. Accounting for differences

Is there a link between the observed degree of mobility in income and education? We try to answer to this question plotting in figure1 the random effect betas [14] and the Eigenvalue calculated from the father-children matrices, separately fro sons and daughters. As it can be seen, two different patterns emerges: there is a (mild) positive correlation between the transmission of income and education towards sons, and a clear negative one towards daughters. I have already stated, and I confirm it now, that fathers behave differently in passing income and education to offsprings accordingly to their sex, and now I can also conclude that when a strong link between father and daughter's income is observed (high betas) tipically the relation between their level of education is weak, while the reverse can be stated for sons.

Theoretical models of intergenerational mobility provide the simplest framework for considering possible reasons for cross-country differences in both income and

[14] estimated using father yearly income.. Used only if significant at least at 10% level.

education intergenerational mobility. Solon (2002) suggests that cross country differences in the degree of mobility should be correlated with differences in earnings returns to education.

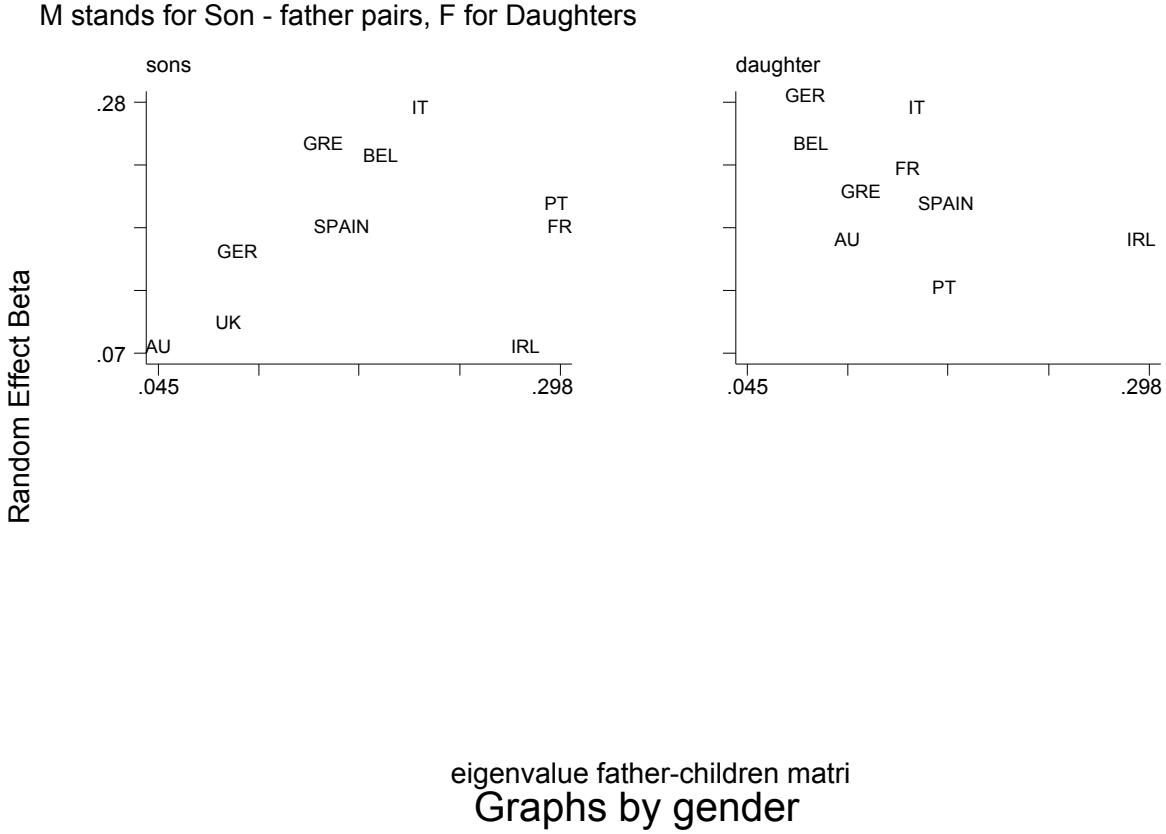

Figure 1: comparison between the random effect betas and the eigenvalue for father-children matrices

Correlation does not imply a causal relationship, however, because relative prices and quantities are jointly determined and institutions themselves could vary in response to price and quantity signal. In figure 2 I cross-examine the estimated intergenerational earnings elasticity[15] against the tertiary/secondary wage gap computed separately for males and females in ECHP in 1995. Although raw comparisons of this type should not be expected to reveal the impact of marginal differences in the tertiary/secondary wage gap, the results nonetheless show that there is no relationship obvious enough to offer an explanation of the observed cross-country heterogeneity. Indeed, it can be observed that the college wage gap is the same for male in Italy and Germanys while they have a completely different degree of income mobility. This does not mean that the earnings returns to human capital is not important. But it is clearly not the all-dominant factor in explaining the observed income elasticity.

[15] Estimated using father yearly income.

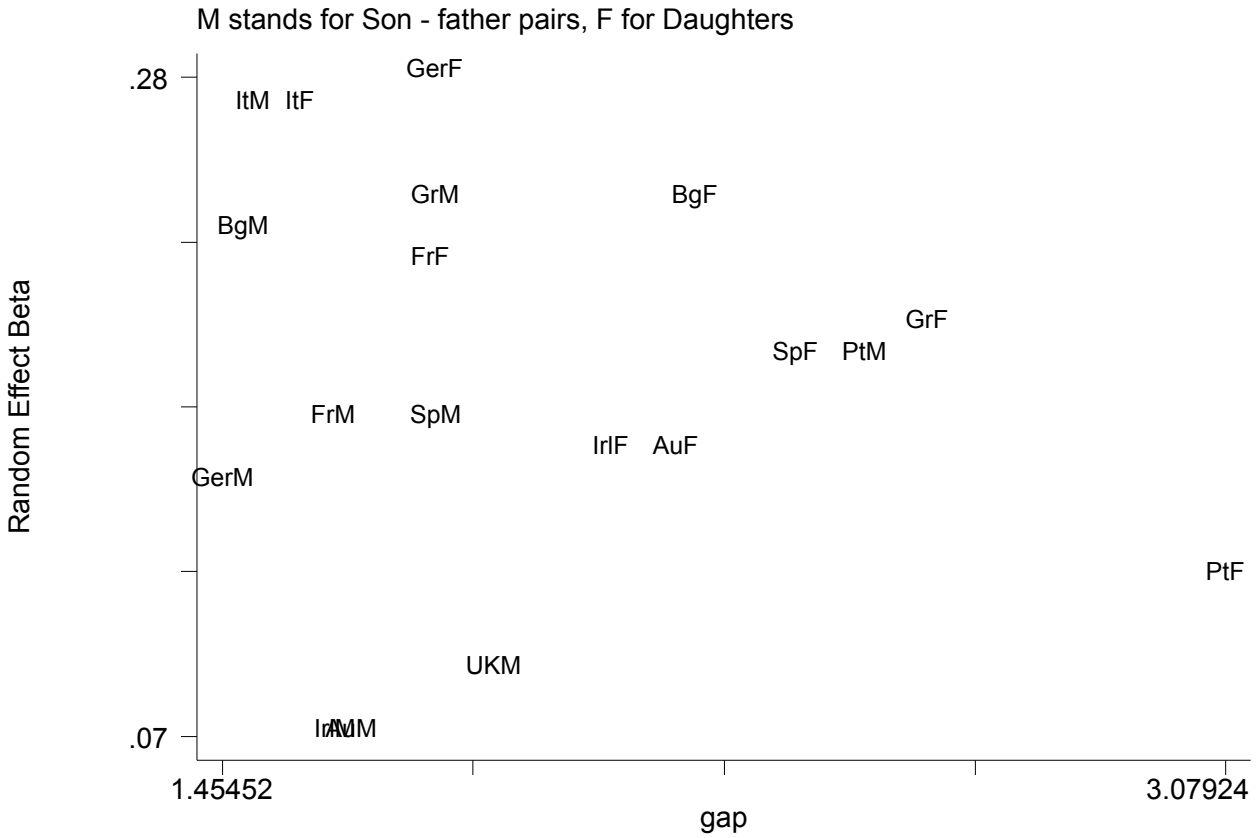

Figure 2: Son –father(M) and daughter-father(F) earnings elasticity and college wage gap[16]

The educational system play a crucial role in intergenerational mobility. Infact, Solon (2002) predicts that intergenerational elasticity increase when the public investment in children's human capital is less progressive. To address this issue estimated $\hat{\beta}$ are plotted against the public expenditure in tertiary education. From figure 3 it seems that, in European countries, they are negatively correlated. [17] Again, it is just a correlation and it is impossible at this stage to conclude that there exists a casual relation

[16] Data for the college wage gap are from OECD Education at a glance 2002. Data are missing for Greece and Austria
[17] Expenditure in primary and secondary education does not show any relevant pattern

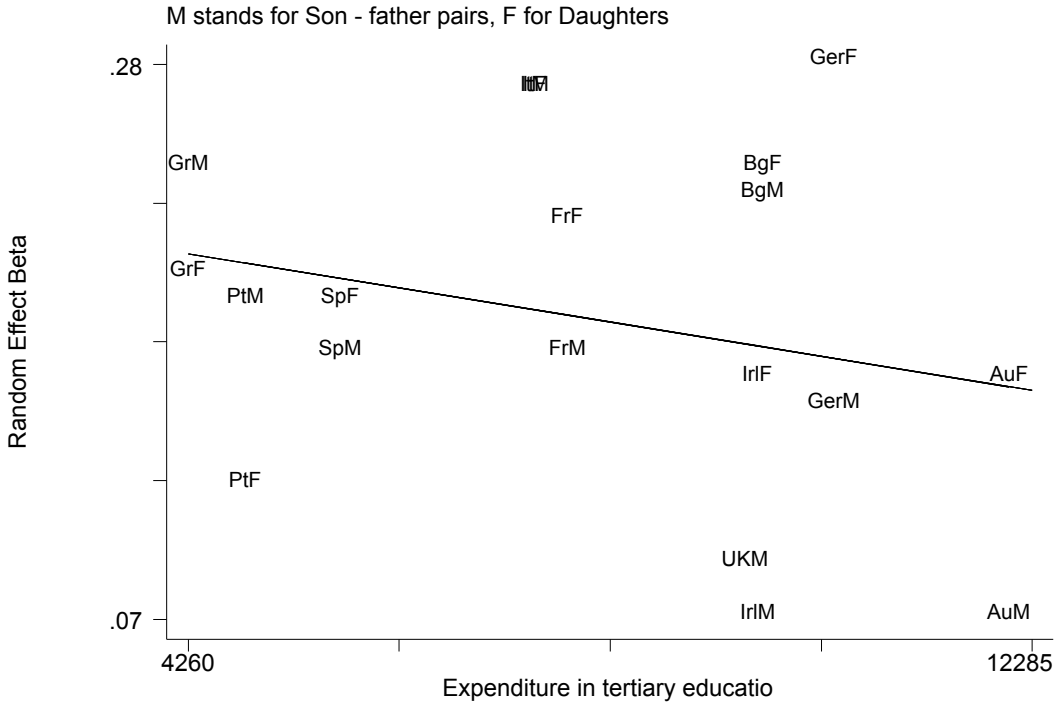

Figure 3: Son –father(M) and daughter-father(F) earnings elasticity and public expenditure in tertiary education

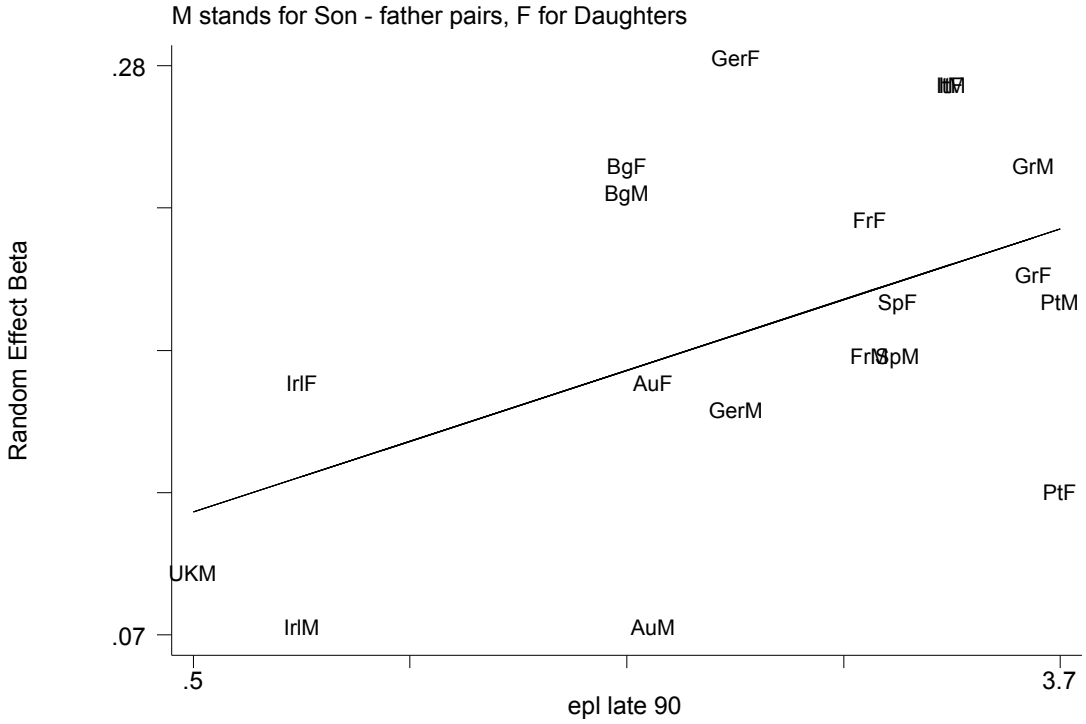

Figure 4: Son –father(M) and daughter-father(F) earnings elasticity and strictness of employment protection law in the late 90's.

Finally, figure 4 questions another plausible factor that can affect intergenerational mobility, the relative strictness of employment protection measures in late 90(EPL90). As can be seen, higher levels of income elasticity are typically associated with higher level of employment protection. It could be easier for fathers to

pass their income to offspring when the labor market is highly protected and children find it difficult to enter.

Explaining cross-country differences in educational mobility is even more complicated. The first attempt that is worth trying is to look whether there might be a relationship between intergenerational education mobility and the predominance of public schools. Panel a and b of Figure 5 plot the percentage of students enrolled in private schools against the eigenvalue of the father and mother-son/daughter transition matrices. A mild negative relation seems to exists, but it should not be concluded that differences in the private enrolment have an impact on intergenerational educational mobility.

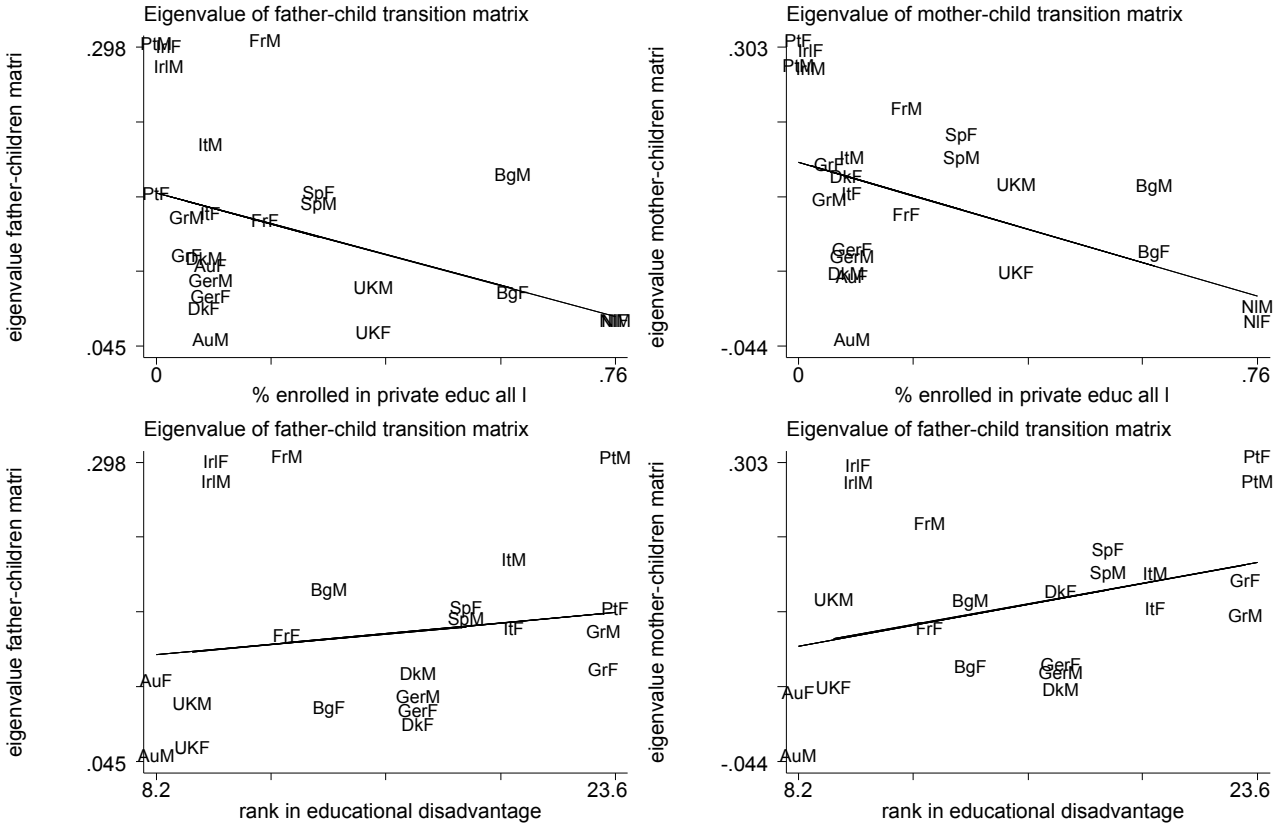

Figure5: Eigenvalues of father-child and mother-child transition matrices and some characteristic of educational systems

Finally, another possible relationship might exist with the relative effectiveness of educational system measured testing what students are able to do. For this purpose, I use the index computed by the *Innocenti Report Card 2002* (UNICEF)[18], that is the average rank scored by nations in five different tables showing the percentage of 14

[18] The index is not computed for The Netherlands so it is excluded from the figure.

and 15 year-olds who fall below fixed international benchmark of competence in reading, maths and science.

The lower is the index, the better the nation performs. Panel c and d of figure 5 plot this index against the eigenvalue computed respectively from father-child and mother –child transition matrices. It seems that a slightly positive relationship exists between the educational mobility of a country and his education performance In fact all the country with a high value of the index have are among the more immobile countries, and I can conclude that when the education system fails to guarantee equality of opportunity the societies seem to be more immobile in education.

7. Concluding remarks

In this paper I provide a new evidence on cross-country comparison of intergenerational mobility using the European Community Household Panel. Although this data-set produces estimation that suffer of many potential biases, such as life cycle bias due to the young age of children, if the distortions are similar across countries, then the results can be useful and produce a better understanding of the forces that shape different societies.

For the first time, I ranked 12 European countries according to their degree of income intergenerational mobility. I found that the estimated income elasticity is never significant in The Netherlands and Denmark. This means that in my sample it is difficult to identify a significant relation between the two generations' earnings, but I can't conclude anything about the degree of mobility in this two countries. As regards the other country, I find that Italy is the most immobile country in Europe, together with Portugal and Greece when considering sons and with Germany when considering daughter.

It seems that Italy and Portugal are the most immobile countries also in education with every measures considered. They are also the European countries with the lowest level of tertiary educational attainment in the population: in these two countries, few people have a tertiary degree and they tend to transmit it to their offspring while upward mobility is still limited.

When I try to explain the observed differences, I find no relation between the income elasticity and earnings returns to human capital, but public expenditure in tertiary education seems to be negatively related to income elasticity. Furthermore there

seems to be a positive relationship between income elasticity and the strictness of the employment protection law. This is just a preliminary analysis of the differences existing in intergenerational mobility across countries, and further investigation is still to be done.

Educational mobility seems to be affected by the performance of the education system measured by the proportion of students fall below given benchmarks of educational achievement, it is not affected by the percentage of students enrolled in private schools

Finally, I confirm that fathers behave differently in passing income and education to offspring accordingly to their sex, and I can conclude that when a strong link between father and daughter's income is observed tipically the relation between their level of education is weak, while the reverse can be stated for sons

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APPENDIX A : Sample means

Country	Son-father pairs		Daughter- father pairs	
	Father earnings averaged including years of unemployment	Father earnings averaged excluding years of unemployment	Father earnings averaged including years of unemployment	Father earnings averaged excluding years of unemployment
Germany (Gsoep)	4028	4282	4027	4186
Denmark	20832	21191	23355	23436
Netherlands	6125	6176	5784	5708
Belgium	87253	89477	95592	96597
France	11690	11944	12416	12704
Uk (Bhps)	1403	1446	1523	1572
Ireland	1376	1445	1439	1509
Italy	2353	2389	2682	2744
Greece	230902	237101	240851	247954
Spain	178962	196697	185602	198936
Portugal	95079	98296	106244	107357
Austria	26995	27644	24931	25355

Table 3: Share of self-employment. By country.

Country	Son-father pairs		Daughter- father pairs	
	Sons' sample	Fathers' sample	Daughters' sample	Fathers' sample
Germany (Gsoep)	2,3	11,0	1,2	8,5
Denmark	2,7	19,5	0,0	10,7
Netherlands	3,6	13,2	0,0	13,0
Belgium	9,9	19,9	3,7	31,4
France	3,1	19,5	1,0	16,5
Uk (Bhps)	7,3	27,9	2,7	21,4
Ireland	10,1	50,9	1,6	40,6
Italy	25,5	42,6	11,0	42,7
Greece	50,1	70,7	22,0	56,3
Spain	20,5	35,5	9,7	29,1
Portugal	16,5	42,2	13,6	41,5
Austria	5,5	27,6	1,5	23,1