Intergenerational earnings mobility in France : Is France more mobile than the US ?

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Abstract

This paper examines the extent and evolution of intergenerational earnings mobility in France. We use data from five waves of the French Education-Training-Employment (FQP) surveys covering the period 1964 to 1993. Our estimation procedure follows Björklund and Jäntti (1997)'s two-sample instrumental variable method. On our samples, the elasticity of son's (respectively daughter's) long-run income with respect to father's long run income is around .4 (resp. .3) with no significant change over the period under scrutiny. Comparing these estimates to results obtained from other studies suggest that intergenerational mobility is higher in France than in the United States and United Kingdom and lower than in Scandinavian countries.

JEL codes : D1,D3,J3.

Keywords : Intergenerational mobility, earnings, split-sample instrumental variables.

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1 Introduction

The idea that individual social class and educational attainment is influenced by family and social background has received considerable attention in the sociological literature. Given the paramount influence of these attributes on earnings, one should consequently expect individual earnings to be correlated across generations of a given family, as suggested in the seminal economic model of inheritance developed by Becker and Tomes (1979; 1986). Following earlier empirical studies by Bowles (1972), Bowles and Nelson (1974), Conlisk (1974), Atkinson (1981), a growing number of studies have been devoted to the analysis of intergenerational income mobility. While these studies have dominantly focused on intergenerational income mobility in the United States, several papers have also examined intergenerational transmission of earnings in other countries including England, Scandinavian countries, Germany and Canada (see Solon (1999;2002) for a summary of international evidence). Beyond the intrinsic interest of measuring intergenerational mobility in each of these countries, comparisons of intergenerational earnings transmission between countries with different labor market institutions, wage structures and educational policy may also provide valuable indications on the mechanisms relating one generation's socio-economic status to the next.

In this perspective, several features of France's socio-economic setting make this country an interesting case for comparison. Firstly, the French labor market is largely viewed as a heavily regulated one yielding a much more compressed wage structure than observed in most developed economies. Secondly, there has been a important fall in wage inequality over the last 30 years (see for instance Goux and

Maurin (2000) and Lefranc (1997)). Thirdly, this period has also been a time of deep reforms of the educational system and of important rise in access to higher education.

The objective of this paper is to study the extent and evolution over time of intergenerational earnings mobility in France. We analyze the elasticity of child's earnings in adulthood to father labor earnings, using five waves from the INSEE Formation-Qualification-Profession labor market surveys, covering the period 1964 to 1994. Our estimation procedure follows Björklund and Jäntti (1997)'s two-sample instrumental variable method.

Several findings emerge from our analysis. Firstly, intergenerational persistence of individual earnings appears rather high in France. Overall, our estimates suggest that the value of intergenerational earning elasticity is about .4, a value rather smaller than most US and UK estimates and much higher than estimates found for Nordic countries, Canada and maybe Germany. Secondly, our results indicate that intergenerational mobility has remained fairly constant over the 1977-1993 period, despite an important fall in intra-generational earnings inequality over that period.

The rest of the paper is organized as follows. Section 2 discusses a standard intergenerational earnings transmission model. Section 3 presents the econometric model. Section 4 describes the data. Sections 5 discusses our main results. Section 6 compares our French results to estimates obtained from other studies and in particular to those obtained on US data.

2 Theoretical framework

The various sources of intergenerational earnings transmission can be emphasized using a simplified version of Becker and Tomes model. This model considers a simplified family model in which at each generation, family only consists of one individual. Consider two generations, father and child, within a given family. Let f index variables pertaining to the father and c index variables pertaining to the child. Individual permanent income Y is assumed to derive from two components : individual endowment in human capital denoted by I; individual ability denoted by a. Hence for $g = f, c$, father and child's permanent income will be given by :

$$Y^g = (1 + r)I^g + a^g$$

where r denote returns to human capital.

Following Becker and Tomes (1979) assume that child's endowment in human capital is chosen by her father as a result of optimal allocation of father's permanent income. Father's utility depends on father's own consumption denoted C^f and child's permanent income Y^c. Assuming Cobb-Douglas preferences and perfect expectations on a^c, father's allocation problem can be summarized by:

$$\begin{cases} \max(C^f)^{\gamma}\mathrm{E}(Y^c)^{1-\gamma} \\ \text{sc:} \\ C^f + I^c = Y^f \\ \mathrm{E}(a^c) = a^c \end{cases}$$

Optimal investment in child's human capital is then given by :

$$I^c = Y^f(1-\gamma) - \frac{\gamma}{1+r}a^c$$

and permanent income of the child can be expressed as a function of her father's earnings by replacing for I^c in the child's permanent income equation. This yields the following relationship between father and child's permanent income :

$$\begin{aligned} Y^c &= (1-\gamma)(1+r)Y^f + (1-\gamma)a^c \\ &= \phi Y^f + \theta a^c \end{aligned} \tag{1}$$

This equation summarizes Becker and Tomes's main relationship. It is sufficient to illustrate different sources of intergenerational earnings correlation. First, equation 1 implies that father's permanent income has a positive influence on child's earnings captured by the parameter ϕ. Parameter ϕ should be interpreted in terms of a "causal" effect of previous generation on next generation's earnings. Other things equal, an exogenous 1 Euro increase in father's earnings will rise child's earnings by ϕ Euros. This source of earnings elasticity only results from the choice of a higher investment in child's human capital as father's earnings increase. The major rationale for this effect, as discussed, for instance, in Becker and Tomes (1986) and Mulligan (1997), is that investment in child's human capital, and more generally child's upbringing, is likely to be constrained by parental resources, in the presence of imperfect capital markets. Hence, alleviating this constraint will then allow parents to provide their children with a better educational environment which will be translated into higher earnings. Mazumder (2001) provides empirical evidence on US data consistent with theoretical models that emphasize borrowing constraints as a major source of intergenerational inequality. Using detailed information on wealth, the intergenerational elasticity is estimated to be negligible for only those in the top quartile of net worth.

A second source of earnings correlation can be present in equation 1 if child's ability a^c is correlated to father's ability a^f. This second effect can be differentiated from the previous one as originating for sources of intergenerational transmission in earnings independent of parental investment decisions and budget constraints. It will encompass all aspects of earnings determinants that "money can't buy" and that can nonetheless be transmitted from one generation to the next. As such, it is likely to include a wide range of social and genetic phenomena such as transmission of IQ, social network or preferences.

Becker and Tomes distinguish these two sources of intergenerational earnings transmissions on the grounds that the first source, investment in human capital, would arise from rational economic investment decision, while the second, ability correlation, would stem from sheer mechanical transmission of individual attributes. This distinction was criticized in Goldberger (1989) who question the usefulness of this distinction. In fact, what matters the most is the fact that the first source of transmission only depends on parent's income contrary to the second, that does not directly depend on income, eventhough, in a reduced form setting, ability will be correlated to income.

From an empirical perspective, it is important to note that simple regression of child's income on father's income will capture both transmission mechanisms. Hence standard estimates of intergenerational earnings regression will provide an upward biased estimate of the causal effect of parental income on child's income. The rest of this paper will be mostly concerned with the estimation of reduced form intergenerational earnings regression. It is worth emphasizing that eventhough this parameter will lack a clear structural interpretation, it constitutes one important descriptive measure of the extent of intergenerational earnings mobility.[1]

3 Econometric model

Letting Y_i^c now denote the logarithm of children's permanent income in family i and Y_i^f the logarithm of his or her father's permanent income, we posit the conventional log-linear regression model :

$$Y_i^c = \beta_0 + \beta Y_i^f + e_i \tag{2}$$

where e_i is a disturbance term independent of Y_i^f and β, the coefficient of intergenerational regression in permanent income, is our parameter of interest. This coefficient represents the *elasticity* of a child's long-run earnings with respect to her father's long run earnings.

Given observations of permanent income for successive generations in a sample of families, equation 2 could be directly estimated by ordinary least squares. Unfortunately, most data sets usually provide much more limited information on both

[1]For a discussion of the causal effect of parental income on children education achievement in France, see Maurin (2002)

children and fathers earnings and socio-economic status. As pointed out in recent papers, these limitations of available data rise several estimation problems.

Firstly, most data sets only provide measures of current earnings (usually as of the survey date) and fail to provide measures of individual permanent income. As shown in Solon (1992) and Zimmerman (1992), using current earnings as a short-run proxy for permanent income in the estimation of 2 will lead OLS estimates of β to be biased toward zero.

To illustrate this point, assume that the log of father's current earnings at date t, Y_{it}^f, is given by :

$$Y_{it}^f = Y_i^f + u_{it}^f \tag{3}$$

where u_{it}^f incorporates transitory fluctuations in father's current earnings and measurement error. Assume further that children's log current income is related to children's log permanent earnings in a similar way and that u_{it}^f and $u_{it'}^c$ are uncorrelated. One can then show that regressing Y_i^c or $Y_{it'}^c$ on Y_{it}^f yields an estimate of β whose probability limit is equal to :

$$\text{plim}\hat{\beta} = \beta \frac{\sigma_{Y^f}^2}{\sigma_{Y^f}^2 + \sigma_{u_{it}^f}^2} < \beta$$

where $\sigma_{Y^f}^2$ and $\sigma_{u_{it}^f}^2$ denote the population variance of fathers permanent income and transitory earnings components.

Different solutions have been offered to reduce or eliminate this downward bias. The first one relies on panel data on fathers earnings and consists in using an average of father's current earnings over several years as a proxy for permanent income. This "averaging procedure" reduces the share of transitory components and measurement errors in the variance of the independent variable and consequently dampens the errors-in-variable bias. A common alternative is to resort to instrumental variable (IV) estimation to estimate β using current measures of children and fathers earnings. Several variables have been used in the literature to instrument father's current earnings, including father's socio-economic status, education, union status and industry. Properties of IV estimates of β will obviously depend on the ability of the set of instruments to pick up inter-individual variance in permanent income. Solon (1992) also notes that if the instruments have an independent effect on children's permanent income beside their effect through father's permanent income, IV estimates of β may be biased, since the usual assumption that the instrument have no separate impact on the explanatory variable will not be verified. In particular, instruments such as father's education or social class are likely to have a direct positive impact on child's achievement and income and may lead to estimates of β that will be upward biased. Results reported in Björklund and Jäntti (1997), comparing different estimation procedures, lent some support to this conjecture.[2]

A second estimation problem arises when available data contain information on father's socio-demographic characteristics but not on father's earnings. In this case, β can still be estimated, as long as a prediction of father's permanent income can be formed based on recorded father's socio-demographic characteristics. This procedure was introduced by Björklund and Jäntti (1997).

Let Z_i^f denote a set of socio-demographic characteristics (e.g. education) of

[2]Corcoran *et al* (1990) provide contradictory evidence that once parental income is controlled for, parental and social class seem to have very limited independent impact on child's earnings.

fathers from a sample of families $i \in I$ and assume that Y_i^f can be written as :

$$Y_i^f = Z_i^f \gamma + \upsilon_i^f$$

where υ_{it}^f is independent of Z_i^f. Y_{it}^f is not observed in sample I. Yet, if there exists a sample J from the same population as I, it can be used to provide an estimate $\hat{\gamma}$ of γ, derived from the estimation of :

$$Y_{jt}^f = Z_j^f \gamma + \upsilon_j^f + u_{jt}^f \tag{4}$$

for $j \in J$. From this, one can form a prediction of father's earnings in sample I. This prediction can in turn be used to estimate β since equations 2, 3 and 4 imply :

$$Y_{it}^c = \beta_0 + \beta(Z_i^f \hat{\gamma}) + v_{it} \tag{5}$$

where $v_{it} = e_i + u_{it}^c + \beta \upsilon_i^f + \beta(Z_i^f(\gamma - \hat{\gamma}))$.

Estimates of β provided in this paper are based on the estimation of equations 4 and 5 on separate samples, described in the following section. Equations 4 and 5 are estimated with OLS, unless otherwise stated, and standard errors of estimates from equation 5 are corrected for heteroscedasticity[3]. To account for life-cycle profiles in earnings, omitted from the above discussion, estimation of both equations include additional control for individual or father's age. Note that this estimation procedure is similar to the IV estimation discussed above, using Z_i^f as instrumental variables,

[3]Heteroscedasticity is taken into account using the Huber White sandwich estimator of the variance.

except for the fact that first step estimates are taken from a different sample than second step estimates. This estimation procedure appears as a special case of Angrist and Krueger (1995)'s split sample instrumental variables estimator. It can be shown to be asymptotically equivalent to standard IV estimates if samples I and J are drawn from the same population. Hence, two sample instrumental variables estimates of β may also be subject to an upward bias, as discussed above.

In the end, not having direct information on father's earnings, in our data sets, appears as a minor limitation, to the extent that error-in-variables bias would have imposed IV estimation and that small sample size in our data could have suggested the use of Angrist and Krueger's split-sample instrumental variable procedure.

4 Data description

4.1 The FQP surveys

Our data are taken from the first five waves of the FQP (Formation, Qualification, Profession) surveys conducted by INSEE in 1964, 1970, 1977, 1985 et 1993. A new sample is drawn for each wave, so that the data do not have a panel structure. The number of individuals surveyed varies across waves : 25 000 individuals in 1964, 38 000 from 1970 to 1985 and 19 000 in 1993. For all waves but 1993, individuals surveyed are taken from a stratified sample of the French population of working age, with different sampling probabilities for each stratus. All estimates are adjusted using sampling weights [4].

[4] Adjusting for sampling weights is particularly justified in our case, since -a- there might be heterogeneity in intergenerational earnings correlation and -b- we are interested in average intergenerational correlation in earnings. Nevertheless, adjusting for weights only have a minor impact

For all individuals surveyed, the data contain detailed information on education, as well as training, labor market experience, 4 digits occupation and industry when relevant. Individual annual earnings (exluding unemployment benefits) in the previous year and number of months worked full- and part-time are also collected in all waves except 1964. In 1964, annual earnings are recorded in interval form, using 9 intervals. Hence, all estimations results reported for wave 1964 are based on interval regression. In all waves earnings refer to labor earnings and are only recorded for salaried workers.

All surveys provide information about the respondent's current family (marital status, number of children) and family of origin (number of siblings, respondent's birth rank). Waves 1977 through 1993 also contain a detailed description of the educational attainment and 2 digits occupation of the father of the respondent, and information about the geographical location of the respondent's parents. This information is reported *a posterio* by survey respondents and refer to the time when the respondent left the schooling system.

In all waves, education is recorded using a 10 levels education classification that distinguishes between general and vocational education. For both education and occupation, classifications changed several time over the five waves. We recoded both variables using a classification homogeneous across survey waves. Occupation is recoded using Erikson and Goldthorpe (1991) social class schema. Education is recoded using a 8 levels classification. The classifications used in this paper are presented in the appendix

on estimates.

4.2 Samples selection rules

Our estimates are based on several samples of children and fathers.

Our samples of children are taken from waves 1977, 1985 and 1993 of the FQP surveys. In each wave, our sample is restricted to individuals aged 30 to 40 years old as of the survey date and being either head of household or spouse of the household head. Individuals with rank of birth in their family of origin higher than or equal to 3 are excluded. This restriction is imposed to avoid over-representation of families with a large number of children. Since we do not observe earnings for self-employed individuals, we also exclude self-employed children as well as children whose father was self-employed from our samples of children. Children reporting zero earnings have been removed from the samples as well as observations with full-time full-year equivalent earnings below half the minimum wage.

Our samples of fathers are taken from waves 1964 through 1985 of the FQP surveys. Several fathers sample can be matched to each of the 1977, 1985 and 1993 children samples, each fathers sample corresponding to a survey wave preceding the survey wave of the children sample[5] : for instance, our 1993 children sample will be matched to four father samples drawn from waves 1985, 1977, 1970, 1964; our 1985 children sample will be matched to three fathers samples (1977, 1970, 1964), ... We select individuals into the fathers samples by assuming that fathers of individuals from our children samples where aged between 25 and 30 years old at the time of the children's birth[6]. Since we restrict children samples to individuals aged 30 to 40 years old, a children sample from wave w will be matched to a fathers sample from

[5]We experiment using the different waves eventhough recorded education and occupation of parents refer to the time the respondents finished initial schooling.

[6]Our samples indicate that mean father's age at the birth of the first child is around 27 years.

w' composed of individuals aged 30+25-w+w' to 40+30-w+w' years old. We also impose that individuals from the fathers samples report at least one child, are not self-employed and are head of household.

4.3 Sample description

Our final samples of children consist of 771 (FQP93), 2114 (FQP85) and 2023 (FQP77) sons and 629 (FQP93), 1502 (FQP85) and 1046 (FQP77) daughters. Differences in the size of sons and daughters samples arise from the survey sampling scheme.

Tables 5 and 6 in the appendix report the main descriptive statistics for our sons and daughters samples. For sons, the distribution of educational attainment appears roughly unchanged when samples are restricted to individuals who report positive annual earnings. On the contrary, in our samples of daughters, individuals reporting positive earnings have higher education than the overall sample suggesting sample selection. As pointed out by Couch and Lillard (1998), dropping observations if chidren report zero earnings might introduce a selection bias which calls for an adequate econometric treatment.

Table 7 compares children's report of their fathers education and social class to the composition of the relevant fathers samples. For all waves, the distributions of fathers' education and social class based on children's report appear broadly consistent in the sons and daughters samples. When differences exist between average sons and daughters reports, there does not appear to be any systematic pattern of misreporting. Children's report also appear consistent with the distribution of education and social class computed from our samples of fathers, suggesting that

Table 1: Intergenerational regression in annual earnings

children sample	93				85			77	
fathers sample	64	70	77	85	64	70	77	64	70
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Panel A : sons								
age	.02	.02	.02	.02	.023	.023	.023	.02	.02
	(.007)	(.007)	(.007)	(.007)	(.003)	(.003)	(.003)	(.003)	(.003)
father's earnings	.414	.4	.438	.436	.342	.363	.377	.398	.432
	(.061)	(.056)	(.06)	(.06)	(.026)	(.027)	(.028)	(.026)	(.027)
Const.	8.089	7.496	7.165	5.944	7.669	6.885	6.47	6.68	5.691
	(.469)	(.522)	(.556)	(.726)	(.238)	(.289)	(.321)	(.247)	(.291)
Obs.	703	703	703	703	1976	1976	1976	1823	1823
R^2	.084	.092	.092	.09	.118	.124	.124	.191	.207
	Panel B : daughters								
age	.017	.017	.017	.017	.018	.018	.018	.014	.013
	(.009)	(.009)	(.009)	(.009)	(.007)	(.007)	(.007)	(.01)	(.01)
father's earnings	.317	.298	.331	.33	.278	.297	.312	.228	.24
	(.084)	(.076)	(.084)	(.084)	(.052)	(.054)	(.054)	(.08)	(.089)
Const.	8.461	8.082	7.797	6.869	8.021	7.374	6.99	7.842	7.34
	(.644)	(.708)	(.768)	(.991)	(.444)	(.53)	(.562)	(.61)	(.791)
Obs.	552	552	552	552	1342	1342	1342	933	933
R^2	.035	.039	.04	.039	.051	.054	.056	.026	.027

Note : second-step estimates of the two-step model, using father's education and social class as instruments. Dependant variable is log annual labor earnings. Father's earnings refers to the log of fathers annual labor earnings. Robust standard errors in parentheses.

children's fathers and pseudo-fathers are drawn from the same population.

5 Results

5.1 Main results

Table 1 reports intergenerational regression coefficient for annual earnings. Estimates in this table are obtained using father's education and social class as a predictor for father's annual earnings. First-step estimates of father's earning regression are given in table 8 in the appendix. In all regressions in table 1, father's

Table 2: Additional estimates of regression in annual earnings

children sample	93				85			77	
fathers sample	64	70	77	85	64	70	77	64	70
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A : sons									
instruments for father's earnings:									
education	.44	.428	.43	.456	.421	.471	.423	.444	.497
	(.073)	(.068)	(.068)	(.072)	(.032)	(.035)	(.033)	(.03)	(.032)
social group	.406	.384	.422	.42	.295	.316	.331	.38	.408
	(.067)	(.059)	(.064)	(.062)	(.027)	(.028)	(.03)	(.027)	(.028)
education, social group, indicator for Paris, indicator for rural area	.433	.422	.463	.46	.343	.363	.377	.384	.414
	(.054)	(.049)	(.055)	(.056)	(.025)	(.027)	(.028)	(.025)	(.027)
Panel B : daughters									
instruments for father's earnings:									
education	.397	.374	.372	.393	.377	.423	.379	.146	.154
	(.105)	(.099)	(.099)	(.104)	(.049)	(.054)	(.049)	(.12)	(.139)
social group	.282	.27	.299	.3	.239	.261	.274	.251	.267
	(.083)	(.075)	(.082)	(.082)	(.056)	(.058)	(.062)	(.072)	(.076)
education, social group, indicator for Paris, indicator for rural area	.402	.37	.404	.403	.318	.332	.347	.169	.179
	(.078)	(.07)	(.077)	(.077)	(.051)	(.053)	(.055)	(.085)	(.094)

Note : second-step estimates of the two-step model, using different sets of instruments as discussed in the table. Dependant variable is log annual labor earnings. Father's earnings refers to the log of fathers annual labor earnings. Robust standard errors in parentheses.

Table 3: Intergenerational regression in wages

children sample	93				85			77	
fathers sample	64	70	77	85	64	70	77	64	70
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					Panel A : sons				
linear regression model									
father's wage	.424	.415	.451	.455	.343	.379	.388	.398	.452
	(.048)	(.045)	(.048)	(.051)	(.023)	(.025)	(.026)	(.025)	(.027)
sample selection model									
father's wage	.429	.421	.457	.462	.349	.38	.384	.407	.458
	(.043)	(.041)	(.043)	(.045)	(.02)	(.021)	(.021)	(.021)	(.022)
λ	-.281	-.279	-.277	-.281	-.217	-.215	-.216	-.272	-.267
	(.035)	(.034)	(.035)	(.034)	(.026)	(.027)	(.027)	(.028)	(.028)
					Panel B : daughters				
linear regression model									
father's wage	.362	.34	.365	.365	.31	.33	.337	.313	.344
	(.053)	(.05)	(.053)	(.056)	(.026)	(.028)	(.027)	(.035)	(.039)
sample selection model									
father's wage	.316	.299	.319	.323	.307	.326	.328	.28	.311
	(.047)	(.044)	(.048)	(.048)	(.024)	(.026)	(.026)	(.028)	(.03)
λ	-.089	-.092	-.093	-.091	-.223	-.217	-.219	-.273	-.273
	(.1)	(.102)	(.105)	(.101)	(.037)	(.038)	(.038)	(.039)	(.039)

Note : second-step estimates of the two-step model, using father's education and social class as instruments. Dependant variable is log monthly wage, where monthly wage is defined as annual labor earnings divided by the sum of number of months worked full-time plus half the number of months worked part tine. Father's wage refers to the log of fathers monthly wage. Sample selection model estimated with maximum likelihood estimation. Selection equation includes father's log predicted earnings, age, indicator for residence in the Paris area, as well as marital status and number of children in the case of our daughter's samples and individual education in the case of our son's sample. Robust standard errors in parentheses.

predicted log earnings has a significant positive effect on child's earnings.

For sons (panel A), regression coefficients are around .41 in 1993, .36 in 1985 and .41 in 1977. For daughters (panel B), regression coefficients are around .32 in 1993, .29 in 1985 and .23 in 1977. Whether for sons or daughters samples, differences across time in the estimated regression coefficients are not statistically significant at conventional levels and the degree of intergenerational persistence in earnings appears broadly constant across the 1977-1993 period. Consequently, the important decrease in intragenerational earnings inequality documented in several papers (see for instance Goux and Maurin (2000) and Lefranc (1997)) has not lead to an increase in intergenerational earnings mobility.

In the light of these coefficients, intergenerational mobility also appears higher for daughters than for sons : for all children-father pairs, estimated regression coefficient are 15 to 40% lower for daughters than for sons. The estimates are always less precise for daughters than for sons. Nevertheless, equality of earnings regression coefficients is only rejected at the level of 5% in 1977 and also partly in 1985. It is however puzzling that, whatever the waves or the specifications, the estimated intergenerational elasticity is systematically higher for sons than for daughters. After all, this result should not be surprising. For older generations, supporting educational achievements of sons might be considered more important in view of the traditional role of bread winners fulfilled by men. In a symmetric way, a smaller investment in daughters than in sons might be vindicated by the fact that daughter's earnings can be supplemented by husband's earnings. This priority granted to sons would be conveyed by a higher value of the parameter $1-\gamma$ for sons than for daughters in the theoretical model exposed in the section 2. Since women are getting more and more independent from a financial viewpoint, this argument seems less and less relevant and a wild guess would be that the discrepancy between intergenerational elasticities for sons and daughters will completely vanish for young generations. Results in Table 1 are supportive of this analysis, since the values of elasticity appear much closer between sons and daughters in the last wave than in the first. However, this feature is not entirely confirmed by results from complementary regressions.

Table 2 reports estimates obtained when using different instrumental variables for fathers earnings. For sons, estimated regression coefficients appear very stable with respect to the set of instruments used. Using father's social class as the only instrumental variable or adding dummy variables for living in Paris and living in a rural area have a very limited impact on estimated coefficients. Using father's education as the only instrumental variable leads to slightly higher regression coefficients. This result is consistent with Solon's remark that IV estimates will be upward driven if instruments have an independent effect on children's earnings. Yet one should note that estimated coefficients are not significantly different across specifications.

Estimates for daughters appear more sensitive to the set of instrumental variables used in first-step regression. For 1993 and 1985, using education as the only instrument leads to higher estimates and using social class only slightly decreases the estimated regression coefficient. The reverse seems to hold for the 1977 children sample. Again, one should be careful in interpreting these differences since none of them appears significant at conventional levels. Finally, using the broadest set of instruments increases regression coefficients for 1993 and 1985 and decreases them for 1977. As a consequence, differences in regression coefficients between sons and daughters only appear statistically significant in 1977.

Our description of regression in annual earnings can be completed by the analysis of regression coefficients for monthly wages given in table 3. Monthly wage is computed by adjusting annual earnings for the number of months work full-time and part time[7]. Estimates in table 3 use father's education and social class as instruments for fathers earnings and can be readily compared to estimates in table 1. Each panel of the table reports estimates from linear regression on the first line. The next lines reports estimates accounting for sample selection in wages and obtained from maximum likelihood estimation of the selection model[8].

For sons, regression coefficients for monthly wages are higher than for annual earnings but the difference in estimated coefficients appears moderate. For daughters, regression coefficients are also higher for monthly wage. This is especially true for our 1985 and 1977 samples. Indeed, using this alternative wage variable, intergenerational earnings regression coefficient appears remarkably constant for daughters, contrary to what table 1 may suggest. Accounting for sample selection does not affect estimated regression coefficients, despite significant selection effects.

These higher regression coefficients for monthly wages indicate that children's number of months worked both part-time and full-time are less strongly correlated to fathers wages and earnings than individual wages. This suggests that participation decisions and employment constraints are likely to weaken the intergenerational elasticity in earnings potential, especially for women in the earlier waves of our samples. Given the precision of our estimates, this interpretation is yet only tentative.

[7]Monthly wage is set equal to annual earnings divided by the number of months worked full time plus half the number of months worked part time.

[8]The selection equation includes father's log predicted earnings, age, indicator for residence in the Paris area, as well as marital status and number of children in the case of our daughter's samples and individual education in the case of our son's sample.

5.2 Sources of earnings correlation

One interesting feature of the two-sample instrumental variable implemented in this paper is that it allows for a straightforward decomposition of the sources of earnings elasticity across generations. Assume for simplicity that both children and fathers log permanent income are observed and that each can be expressed as :

$$Y_i^g = Educ_i^g \gamma_e^g + Soc_i^g \gamma_s^g + \upsilon_i^g \text{ for } g = c, f \tag{6}$$

where *Educ* and *Soc* respectively denote measures of individual's education and social class.[9]

Our two-step estimate of β is simply given by :

$$\beta = \frac{\text{cov}(Y_i^c, Educ_i^f \gamma_e^f + Soc_i^f \gamma_s^f)}{\text{V}(Educ_i^f \gamma_e^f + Soc_i^f \gamma_s^f)}$$

Expanding terms using equation 6, β can be written as :

$$\begin{aligned}
\beta \quad = \quad & \frac{1}{\text{V}(Educ_i^f \gamma_e^f + Soc_i^f \gamma_s^f)} \times [\gamma_e^c \text{cov}(Educ_i^c, Educ_i^f)\gamma_e^f + \gamma_s^c \text{cov}(Soc_i^c, Educ_i^f)\gamma_e^f \\
& + \gamma_e^c \text{cov}(Educ_i^c, Soc_i^f)\gamma_s^f + \gamma_s^c \text{cov}(Soc_i^c, Soc_i^f)\gamma_s^f \\
& + \text{cov}(\upsilon_i^c, Educ_i^f)\gamma_e^f + \text{cov}(\upsilon_i^c, Soc_i^f)\gamma_s^f]
\end{aligned}$$

Hence β can be decomposed into the sum of six terms corresponding to the covariance of fathers education and social class on children's education, social class and earnings residual, each multiplied by the effect of the relevant variable on children

[9] Age effects are ignored here for ease of exposition but are taken into account in the empirical implementation of the decomposition.

Table 4: Decomposition of earnings regression coefficient

children sample	93				85			77	
fathers sample	64	70	77	85	64	70	77	64	70
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A : sons									
edu_f-edu_c	.0419	.0364	.0478	.0323	.0255	.0247	.0302	.0327	.0358
soc_f-soc_c	.1522	.1497	.1536	.1769	.1560	.1719	.1621	.1468	.1568
edu_f-soc_c	.0763	.0677	.0900	.0610	.0771	.0750	.0959	.0620	.0702
soc_f-edu_c	.0875	.0836	.0855	.0973	.0475	.0523	.0487	.0709	.0767
edu_f-res_c	.0016	.0057	.0081	.0050	.0178	.0163	.0185	.0278	.0336
soc_f-res_c	.0541	.0565	.0530	.0630	.0177	.0226	.0209	.0587	.0593
total	.4139	.3999	.4382	.4359	.3419	.3631	.3766	.3991	.4327
Panel B : daughters									
edu_f-edu_c	.0180	.0153	.0201	.0137	.0204	.0193	.0246	.0330	.0344
soc_f-soc_c	.2024	.1934	.1939	.2221	.1819	.2014	.1864	.1386	.1482
edu_f-soc_c	.1006	.0848	.1105	.0737	.0893	.0860	.1091	.0618	.0674
soc_f-edu_c	.0441	.0427	.0422	.0487	.0381	.0422	.0393	.0781	.0822
edu_f-res_c	-.0124	-.0101	-.0133	-.0090	-.0025	-.0023	-.0044	-.0523	-.0564
soc_f-res_c	-.0358	-.0277	-.0229	-.0190	-.0491	-.0500	-.0436	-.0307	-.0338
total	.3168	.2984	.3305	.3302	.2781	.2966	.3115	.2287	.2421

Note : X_f-Y_c denotes the contribution of the correlation between father's X variable and child's Y variable to the correlation between father and child's earnings.

of fathers' permanent income respectively. Note that this decomposition should be seen only as a descriptive device along the lines suggested in Bowles and Gintis (2002) and not as an analysis of causal effects.

We apply this decomposition to our estimates of annual earnings elasticities. Results are given in table 4. They can be read as follows : assuming that the only channel of intergenerational earnings correlations would work through the correlation of father and child's education, earnings regression coefficient for our 1993 sons sample, using our 1964 father sample would be equal to .0419.

It appears from this table that for all years and samples and for both sons and daughters, the bulk of the intergenerational correlation in earnings arises from the correlation between fathers and children social class. As expected, father's social class also influences intergenerational elasticity through its effect on children's education. Adding up both effects of father's social class accounts for more than half of the intergenerational elasticity coefficient. Comparatively, father's education accounts for a smaller share of intergenerational regression in earnings and most of the effect of this variable arises from the correlation between father's education and child's social class. Lastly, the respective contribution of father's education and social class to regression in earnings appears remarkably constant across our different children waves. The rather limited contribution of differences in father's education should not be surprising since the distribution of education in the sample of fathers appears strongly concentrated among low education groups. Consequently, father's education be a much less accurate predictor of child's socio-economic background. What could appear more surprising is the fact that the size of the different effects working through the education of the child has not changed markedly between 1977 and 1993, despite, among other things, an important increase in the average educational attainment over this period. In fact, this result confirms previous findings that social mobility has remained roughly constants over the past decades (Goux and Maurin, 1997).

6 Discussion and conclusion

Our estimates of intergenerational income elasticity on two generations in France can be compared to results obtained from other countries. We will restrict the comparison to developed countries with similar economic and political background. In comparing our estimates to those of other studies, one should be aware of the potential impact of differences in both the definition of the children's samples and the estimation method applied. As an example, in the US case, estimated intergenerational earnings elasticities range from a low .13 to as high as .61 depending on the study considered. For instance, in his 1988 presidential address to the American Economic Association, Gary Becker (1988) trumpeted that his estimates of 0.2 for the intergenerational elasticity testified to the American dream of strong social fluidity. However, this estimate, based on a single observations of father and child earnings is now viewed as seriously downward biased by the presence of transitory earnings components as discussed in section 3. Solon (1997) provides an extensive survey of US results obtained in the nineties and concludes : "*all in all, .4 or a bit higher also seems a reasonable guess of the intergenerational elasticity in long-run earnings for men in the United States*". This conclusion is rooted in studies using multi-year averages of father and child earnings, computed from panel data, as a measure of individual permanent income. The incidence of error-in-variables biases has in fact been further emphasized in a recent paper by Mazumder (2001) who provides an even less rosy picture of intergenerational mobility in the US. Using a long panel of social security files, this author was able to average individual earnings over a considerably longer period than previous studies. His main findings is that the larger the time span over which earnings are averaged, the higher is the intergenerational elasticity. Averaging earnings over a period of 16 years leads to an elasticity of 0.613. In the light of these estimates, the American dream seems much less promising.[10]

Regarding the overall level of intergenerational mobility, a good benchmark for comparing our estimates to results from other countries is provided by Björklund and Jäntti (1997), a study that appears very close to ours, both in terms of the sample definition and the method used. Their result point to an elasticity of .52 for the United-States and .28 for Sweden. Comparing estimates obtained with the two-stage instrumental variables to those obtained from the 'averaging' procedure described in section 3, they further suggest that the two-stage procedure may yield higher, possibly upward biased[11], estimates of β . Dearden, Machin et Reed (1997) also estimate elasticity in earnings for Britain based on a procedure similar to ours. This leads to a value for β of .57 for sons. Compared to our findings, this indicates that France displays more intergenerational mobility than the US and Britain but less than Sweden. A tentative explanation of this rather surprising result, as France and US are concerned, may underline the difference in the way higher education is financed in these two countries. In the former country, access to higher education is free, while in the latter payment of tuitions may be a problem for poor households, even if generous grants are available for bright students. Hence, in presence of borrowing constraints, parental wealth may bite more in the US than in France. But clearly this is not a definite answer and, as the US literature suggests, the estimates of the intergenerational income elasticity obtained here for France should be confirmed by using richer French data sets or different estimation methods.

[10] Complementary results by Hertz (forthcoming) also document that the black-white mobility gap contributes an important fraction of the intergenerational persistence of inequality.

[11] While Solon argues forcefully that the IV procedure might introduce an upward bias, it is puzzling to notice that the estimates found by Mazumder are closer to those obtained by Björklund and Jäntti than to those obtained by Solon.

Evidence available for other countries and surveyed in Solon (2002) suggest a rather high degree of intergenerational mobility in Finland (Osterbacka, 2001) and Canada (Corak and Heisz, 1999) (β around .2 or lower) and an intermediate degree of mobility for Germany (β=.34). Overall, our results hint at France's intermediate rank in the intergenerational mobility scale, between a group of mobile societies including Nordic countries and Canada and a group of less mobile countries composed of England and the United-States. It is striking that the same broad ranking of countries emerge from international comparisons of inequality (see for instance Gottshalk and Smeeding (2000) and Sastre and Trannoy (2001). As such, more unequal societies tend to be less mobile, a feature which calls for some theoretical explanations.

Two final remarks are also in order, regarding differences between sons and daughters and time trends. Results in Mazumder (2001) indicate that in the US the elasticity in earnings between fathers and daughters is of a similar magnitude than between fathers and sons. Our results suggests, that in France, especially in the earlier waves of our surveys, intergenerational mobility may be higher for daughters than for sons, eventhough the equality of the coefficients cannot be rejected for the more recent waves. Lastly, intergenerational mobility appears fairly constant for cohorts fifteen years apart which suggests that important reforms of the French educational system that started in the 1960's may not have been very successful in increasing social fluidity. For the US, the story which emerges (see for instance Harding *et al.* (2001)) is similar to France : there is basically no trend except maybe an improvement for the sixties. This calls for further analysis of the mechanisms underlying intergenerational earnings transmission.

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7 Appendix

Table 5: Descriptive statistics - sons samples

		sons samples											
survey wave		93				85				77			
Obs		771				2114				2023			
annual earnings	mean	115566.658				99727.593				47850.697			
	Obs	714				2015				1969			
monthly wage	mean	119235.120				102261.056				48345.660			
(FT eq)	Obs	711				2015				1969			
		all obs.		obs. w/ earnings>0		all obs.		obs. w/ earnings>0		all obs.		obs. w/ earnings>0	
		freq.	wgt freq	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.
education													
	>bac	0.220	0.223	0.221	0.223	0.251	0.180	0.253	0.181	0.260	0.184	0.263	0.187
	gen bac	0.058	0.056	0.057	0.056	0.048	0.039	0.047	0.038	0.043	0.035	0.045	0.036
	voc bac	0.073	0.078	0.076	0.081	0.043	0.037	0.043	0.037	0.034	0.031	0.033	0.031
	br prof	0.013	0.013	0.013	0.013	0.049	0.048	0.050	0.049	0.093	0.086	0.093	0.086
	cap	0.380	0.379	0.381	0.379	0.314	0.353	0.316	0.354	0.265	0.300	0.265	0.301
	brc	0.074	0.072	0.076	0.074	0.067	0.063	0.067	0.064	0.052	0.050	0.052	0.050
	cep	0.043	0.042	0.045	0.044	0.136	0.163	0.133	0.160	0.142	0.172	0.142	0.170
	none	0.139	0.137	0.132	0.131	0.093	0.116	0.093	0.117	0.111	0.142	0.108	0.139
social class													
	I			0.143	0.140			0.221	0.150			0.254	0.168
	II			0.125	0.137			0.166	0.146			0.169	0.153
	IIIa			0.101	0.104			0.094	0.094			0.062	0.069
	IIIb			0.032	0.032			0.029	0.035			0.027	0.031
	V			0.106	0.102			0.133	0.120			0.145	0.145
	VI			0.331	0.329			0.241	0.305			0.213	0.267
	VII			0.162	0.156			0.116	0.150			0.130	0.167

Notes : freq. denotes sample frequencies, wgt. freq. denotes weighted sample frequencies. Classification are :
education : none - Inadequately completed primary education; cep - General primary education; cap - Basic vocational qualification; brc - Intermediate vocational qualification; brc - Intermediate general qualification; gen bac - General maturity certificat; voc bac - Vocational maturity certificate; > bac - Higher education;
social class : I - Higher-grade professionals, administrators, and officials, managers in large industrial establishments, large proprietors; II - Lower-grade professionals, administrators, and officials; higher-grade technicians, managers in small industrial establishments, supervisors of non-manual employees; IIIa - Routine non-manual employees, higher grade (administration and commerce); IIIb - Routine non-manual employees, lower grade (sales and services); V - Lower-grade technicians supervisors of manual workers; VI - Skilled manual workers; VII - Semi- and unskilled manual workers;

Table 6: Descriptive statistics - daughters samples

		daughters samples											
survey wave		93				85				77			
Obs		629				1502				1046			
annual earnings	mean	82131.715				73403.183				33317.933			
	Obs	558				1365				987			
monthly wage	mean	97889.498				83649.366				35780.385			
(FT eq)	Obs	557				1365				987			
		all obs.		obs. w/ earnings>0		all obs.		obs. w/ earnings>0		all obs.		obs. w/ earnings>0	
		freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.	freq.	wgt freq.
education													
	>bac	0.278	0.281	0.283	0.286	0.326	0.229	0.340	0.242	0.278	0.188	0.286	0.199
	gen bac	0.075	0.073	0.081	0.079	0.065	0.058	0.068	0.062	0.094	0.087	0.095	0.092
	voc bac	0.072	0.073	0.075	0.077	0.033	0.035	0.034	0.034	0.016	0.018	0.016	0.016
	br prof	0.005	0.005	0.004	0.004	0.029	0.029	0.031	0.030	0.072	0.067	0.071	0.069
	cap	0.299	0.304	0.299	0.302	0.229	0.271	0.226	0.271	0.192	0.209	0.189	0.211
	brc	0.086	0.082	0.082	0.079	0.088	0.091	0.089	0.092	0.088	0.091	0.094	0.101
	cep	0.060	0.058	0.056	0.053	0.155	0.195	0.146	0.183	0.182	0.234	0.180	0.227
	none	0.126	0.124	0.120	0.120	0.075	0.093	0.067	0.084	0.078	0.107	0.069	0.086
social class													
	I			0.090	0.092			0.151	0.076			0.163	0.092
	II			0.237	0.248			0.305	0.274			0.338	0.312
	IIIa			0.373	0.368			0.286	0.332			0.239	0.277
	IIIb			0.161	0.156			0.119	0.154			0.101	0.137
	V			0.016	0.016			0.015	0.013			0.028	0.030
	VI			0.045	0.048			0.040	0.053			0.033	0.035
	VII			0.079	0.073			0.084	0.099			0.096	0.117

Notes : freq. denotes sample frequencies, wgt. freq. denotes weighted sample frequencies. Classification are :
education : none - Inadequately completed primary education; cep - General primary education; cap - Basic vocational qualification; brc - Intermediate vocational qualification; brc - Intermediate general qualification; gen bac - General maturity certificat; voc bac - Vocational maturity certificate; > bac - Higher education;
social class : I - Higher-grade professionals, administrators, and officials, managers in large industrial establishments, large proprietors; II - Lower-grade professionals, administrators, and officials; higher-grade technicians, managers in small industrial establishments, supervisors of non-manual employees; IIIa - Routine non-manual employees, higher grade (administration and commerce); IIIb - Routine non-manual employees, lower grade (sales and services); V - Lower-grade technicians supervisors of manual workers; VI - Skilled manual workers; VII - Semi- and unskilled manual workers;

Table 7: Distribution of father's education and social group and coincidence with pseudo-father sample

children sample	93						85					77			
	sons' report	daughters' report	fathers' sample 85	77	70	64	sons' report	daughters' report	fathers' sample 77	70	64	sons' report	daughters's report	fathers' sample 70	64
education															
>bac	0.077	0.087	0.058	0.092	0.093	0.105	0.055	0.059	0.055	0.083	0.085	0.061	0.055	0.039	0.060
gen bac	0.033	0.060	0.032	0.029	0.026	0.029	0.030	0.040	0.038	0.035	0.037	0.039	0.055	0.041	0.045
voc bac	0.029	0.024	0.007	0.014	0.014	0.020	0.006	0.013	0.006	0.014	0.010	0.007	0.012	0.004	0.009
br prof	0.007	0.002	0.025	0.035	0.059	0.058	0.025	0.022	0.021	0.035	0.054	0.027	0.019	0.021	0.034
cap	0.210	0.204	0.214	0.200	0.200	0.221	0.156	0.128	0.154	0.140	0.134	0.113	0.141	0.133	0.107
brc	0.029	0.036	0.026	0.031	0.036	0.040	0.041	0.056	0.027	0.034	0.047	0.053	0.067	0.033	0.039
cep	0.315	0.318	0.298	0.266	0.260	0.231	0.337	0.366	0.354	0.312	0.322	0.336	0.333	0.310	0.296
none	0.300	0.269	0.340	0.334	0.312	0.297	0.349	0.317	0.346	0.347	0.311	0.364	0.317	0.420	0.410
social group															
I	0.104	0.137	0.073	0.108	0.138	0.170	0.097	0.111	0.092	0.120	0.153	0.118	0.119	0.102	0.122
II	0.100	0.075	0.077	0.073	0.087	0.096	0.100	0.093	0.084	0.075	0.089	0.081	0.105	0.089	0.087
IIIa	0.105	0.110	0.059	0.070	0.062	0.076	0.082	0.087	0.068	0.077	0.061	0.111	0.115	0.071	0.082
IIIb	0.010	0.013	0.034	0.037	0.040	0.051	0.010	0.016	0.036	0.035	0.047	0.022	0.028	0.051	0.045
V	0.112	0.098	0.108	0.117	0.136	0.134	0.076	0.094	0.103	0.114	0.124	0.094	0.089	0.086	0.091
VI	0.307	0.303	0.306	0.280	0.273	0.255	0.306	0.288	0.278	0.255	0.253	0.300	0.317	0.264	0.222
VII	0.262	0.264	0.344	0.315	0.263	0.219	0.329	0.312	0.338	0.325	0.272	0.275	0.227	0.337	0.351

Notes : all frequencies are weighted using sampling weights. Classification are :
education : none - Inadequately completed primary education; cep - General primary education; cap - Basic vocational qualification; brc - Intermediate vocational qualification; brc - Intermediate general qualification; gen bac - General maturity certificat; voc bac - Vocational maturity certificate; > bac - Higher education;
social class : I - Higher-grade professionals, administrators, and officials, managers in large industrial establishments, large proprietors; II - Lower-grade professionals, administrators, and officials; higher-grade technicians, managers in small industrial establishments, supervisors of non-manual employees; IIIa - Routine non-manual employees, higher grade (administration and commerce); IIIb - Routine non-manual employees, lower grade (sales and services); V - Lower-grade technicians supervisors of manual workers; VI - Skilled manual workers; VII - Semi- and unskilled manual workers;

Table 8: First step estimates of father's earnings equation

children sample	93				85			77	
fathers sample	64	70	77	85	64	70	77	64	70
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
age	.133	.064	.092	.002	.038	-.012	-.002	.047	.0009
	(.021)	(.019)	(.028)	(.054)	(.029)	(.028)	(.048)	(.04)	(.047)
age^2	-.001	-.0007	-.0009	-.00002	-.0004	.00009	-.00005	-.0004	-.00007
	(.0003)	(.0002)	(.0003)	(.0005)	(.0004)	(.0003)	(.0004)	(.0004)	(.0004)
educ- > bac	.39	.409	.471	.318	.529	.456	.601	.491	.544
	(.034)	(.022)	(.028)	(.037)	(.037)	(.026)	(.037)	(.051)	(.04)
educ- bac gal	.281	.36	.327	.173	.319	.393	.376	.348	.386
	(.037)	(.031)	(.039)	(.053)	(.038)	(.033)	(.044)	(.045)	(.044)
educ- bac tec	.265	.341	.331	.217	.426	.302	.33	.437	.235
	(.07)	(.041)	(.05)	(.059)	(.083)	(.047)	(.074)	(.126)	(.081)
educ- br.prof	.24	.234	.318	.226	.32	.233	.312	.438	.171
	(.038)	(.027)	(.027)	(.038)	(.047)	(.031)	(.036)	(.058)	(.044)
educ- cap	.208	.166	.168	.126	.229	.186	.162	.217	.212
	(.017)	(.014)	(.017)	(.023)	(.02)	(.018)	(.025)	(.026)	(.027)
educ- brc	.235	.209	.223	.154	.269	.229	.289	.267	.278
	(.038)	(.029)	(.034)	(.044)	(.04)	(.032)	(.04)	(.046)	(.043)
educ- cep	.071	.128	.113	.065	.104	.121	.109	.128	.148
	(.015)	(.013)	(.016)	(.023)	(.016)	(.014)	(.019)	(.019)	(.02)
eg- II	-.35	-.435	-.386	-.485	-.382	-.45	-.376	-.454	-.461
	(.031)	(.023)	(.026)	(.032)	(.031)	(.026)	(.032)	(.038)	(.035)
eg- IIIa	-.623	-.631	-.62	-.718	-.781	-.663	-.689	-.94	-.742
	(.035)	(.025)	(.03)	(.037)	(.036)	(.027)	(.039)	(.043)	(.037)
eg- IIIb	-.547	-.718	-.718	-.943	-.695	-.779	-.801	-.867	-.857
	(.042)	(.03)	(.035)	(.043)	(.045)	(.035)	(.043)	(.05)	(.045)
eg- V	-.305	-.458	-.43	-.519	-.402	-.481	-.417	-.435	-.499
	(.032)	(.022)	(.025)	(.033)	(.032)	(.025)	(.032)	(.041)	(.036)
eg- VI	-.58	-.758	-.675	-.84	-.686	-.787	-.695	-.775	-.827
	(.03)	(.02)	(.024)	(.032)	(.03)	(.023)	(.031)	(.036)	(.032)
eg- VII	-.848	-.968	-.823	-.899	-1.001	-1.02	-.884	-1.1	-1.062
	(.031)	(.021)	(.025)	(.034)	(.031)	(.023)	(.031)	(.037)	(.032)
Const.	7.089	8.897	8.853	11.827	8.896	10.623	11.28	8.681	10.375
	(.345)	(.381)	(.644)	(1.431)	(.592)	(.648)	(1.264)	(.968)	(1.287)
σ	.349				.35			.348	
	(.004)				(.005)			(.006)	
Obs.	4186	6488	4655	2672	3502	5305	3231	2364	3543
R^2		.525	.489	.501		.544	.528		.507

Notes : standard errors in parentheses. Columns (1), (5) and (8) are estimated using interval regression and σ denotes estimated standard error of residuals. Regressors are : **education** : none (reference) - Inadequately completed primary education; cep - General primary education; cap - Basic vocational qualification; brc - Intermediate vocational qualification; brc - Intermediate general qualification; gen bac - General maturity certificat; voc bac - Vocational maturity certificate; > bac - Higher education;

social class : I (reference)- Higher-grade professionals, administrators, and officials, managers in large industrial establishments, large proprietors; II - Lower-grade professionals, administrators, and officials; higher-grade technicians, managers in small industrial establishments, supervisors of non-manual employees; IIIa - Routine non-manual employees, higher grade (administration and commerce); IIIb - Routine non-manual employees, lower grade (sales and services); V - Lower-grade technicians supervisors of manual workers; VI - Skilled manual workers; VII - Semi- and unskilled manual workers;