Intra-household allocation of family resources and birth order: Evidence from France using siblings data

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(1) Family resources and birth order

- **Numerous studies have focused on factors explaining differences in educational achievement**
  - Role played by parental characteristics
    - Focus on the intergenerational transmission of human capital, from parents to children (Becker and Tomes, 1986, JOLE)
      - The intergenerational correlation in education is around 0.3-0.4 in many developed countries
    - Causal effect of parental education (Maurin and McNally, 2008, JOLE)
  - Role played by characteristics of children
    - Gender, birth cohort
    - Composition of the sibship
      - Number of sibilings
      - Sibship sex composition
      - Birth order

(2) Family resources and birth order

- **Two types of educational inequalities:**
  - Between families (educated versus non-educated)
  - Within families, between brothers and sisters
- **Less attention devoted to the intra-household allocation of family resources**
  - Behrman Pollak Taubman (1995), From parent to child. Intrahousehold allocations and intergenerational relations in the US, U of Chicago Press
  - Simple measures of educational inequalities proposed by Picard and Wolff (2010, JPopEco, 2013, RE), based on variance decomposition
    - Differences in schooling between families amount to about two-thirds of the total variance in education in France
- **Recent research has shown a consistent pattern accross countries revealing a first-born advantage in education and earnings**
  - Behrman and Taubman (1986, JOLE), Black, Devereux and Salvanes (2005, QJE), Conley and Glauber (2006, JHR), Kantarevic and Mechoulan (2006, JHR), de Haan(2010, EER)
  - Mechanisms underlying this phenomenon are not so well identified
    - Confluence theory (Zajonc, 1976) , resource dilution theory

(3) Family resources and birth order

- **Contribution: to provide an empirical analysis of the role of birth order on educational attainment, occupation and also receipt of parental transfers in France**
  - Very few studies on the role of birth order in France …
  - All studies do not take into account the potential role of observed and unobserved heterogeneity (along with sometimes a « biased » measure of birth order)
  - Focus on what happens along (part of) the life cycle
    - parents have the possibility to compensate/reinforce differences in the economic situation of their children through financial transfers
- **Methodology**
  - Use of cross-sectional surveys to get information on sibships
  - Focus on the role of birth order net of the role played by family characteristics
  - Estimation of random and fixed effect ordered models

(4) Family resources and birth order

- **Potential mechanisms leading to birth order effects …**

(1) Quality-quantity trade-off (Becker et Lewis, 1973, JPE)

- With many siblings, mechanically fewer resources per child
- Advantage for the first-born … or late-born ? (role of parental position in the life-cycle)

(2) Possible interactions within the sibship

- Parents may have less time to devote to the first-born (if they have young babies) …
- But first-born may learn by helping the late-born children

(3) Specific parental preferences for some children only

- Parents will give more to their preferred children

(4) Transmission of family wealth (not necessarily divisible)

(5) Parental aversion againts inequality between children

- Possibility of equal investment in children, but siblings may not face the same conditions of education …

➔ ***On a priori grounds, the potential effect of birth order on education cannot be signed***

(5) Family resources and birth order

- **Detailed information on siblings needed to study the role of birth order**
  - Control for family-specific unobserved heterogeneity (each child is affected by the same unobservables)

- **Use of four repeated cross-sectional surveys conducted by INSEE**
  - Actifs Financiers 1992
  - Patrimoine 1998
  - Patrimoine 2004
  - Patrimoine 2010

  => large sample sizes (more than 10000HH), birth cohorts born between 1940 and 1985, module on children living by their own

- **Sample construction**
  - Selection of the head of the HH + spouse if any (sample of parents)
  - Selection of children living with parents + non-coresident children (sample of children)
  - Matching of 'parents' and 'children' samples
  - Sample selection:
    - Exclusion of children aged under 24
    - Exclusion of mothers aged under 45
    - Exclusion of children whose father or mother's age is under 14

(6) Family resources and birth order

- **Final sample: 41688 parent-child pairs corresponding to 18219 families**
  - 3468 sibships in 1992, 4099 in 1998, 4127 in 2004, 6525 in 2010

- **Outcomes of interest**

1) Level of education

- Ordered outcome with five categories: no diploma / less than high school / high school / undergraduate / graduate or postgraduate studies
- In the 1992 survey, only one category for more than high school

2) Occupation

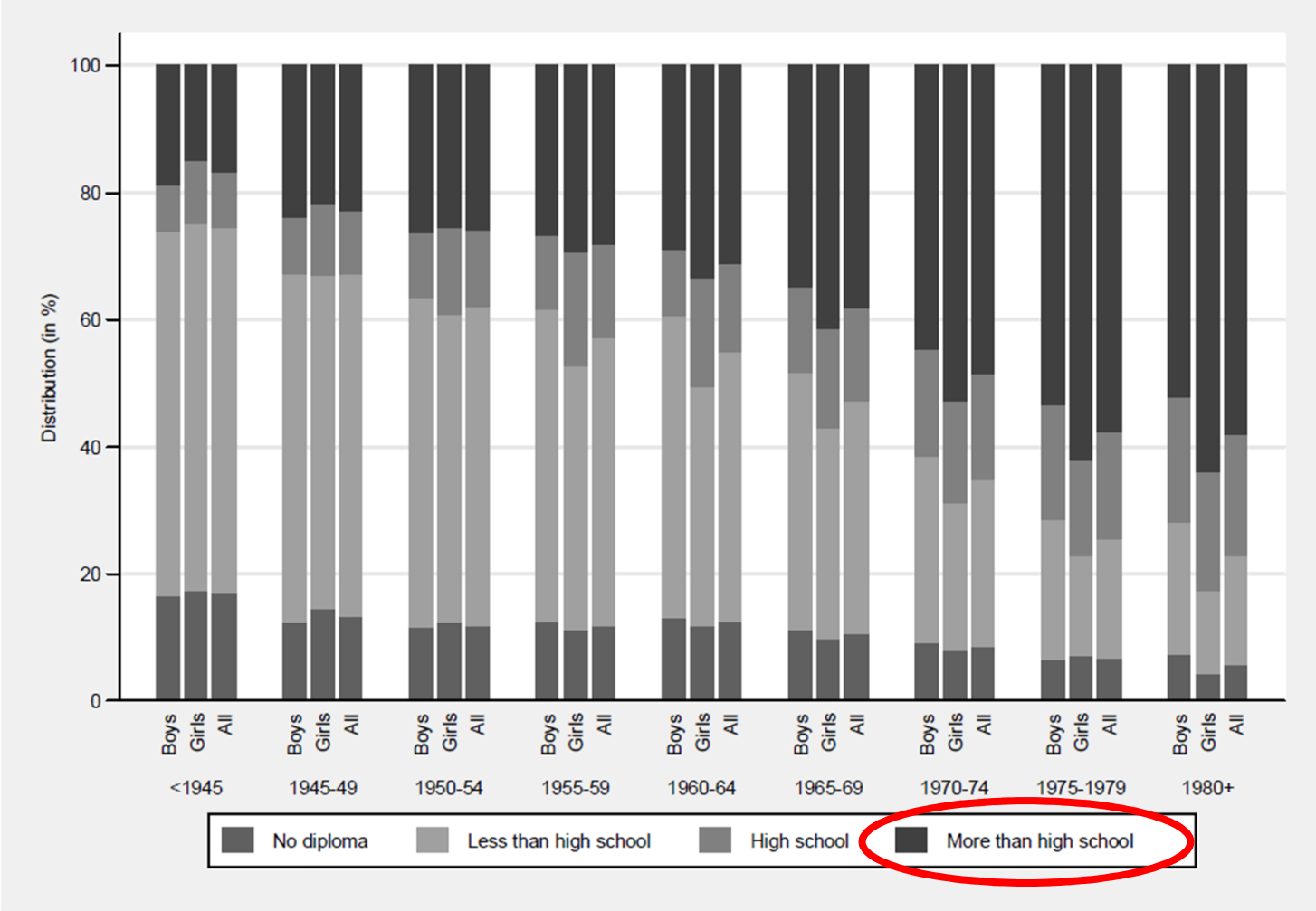
- Farmer, self-employed, manager, intermediate occupation, white-collar worker, unskilled/skilled worker
- Focus on an ordered outcome, restriction to four categories: manager, intermediate, white-collar worker, or unskilled/skilled workerl

3) Financial transfers given to children

- Any financial help to children (financial gift for a specific event, regular gifts, payment of housing rent, financial loan), but no information on who receives
- Donations made to children in the 1998, 2004 and 2010 surveys

(7) Family resources and birth order

Figure 1. Education of children, by birth cohort and gender



Source : authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

(7) Family resources and birth order

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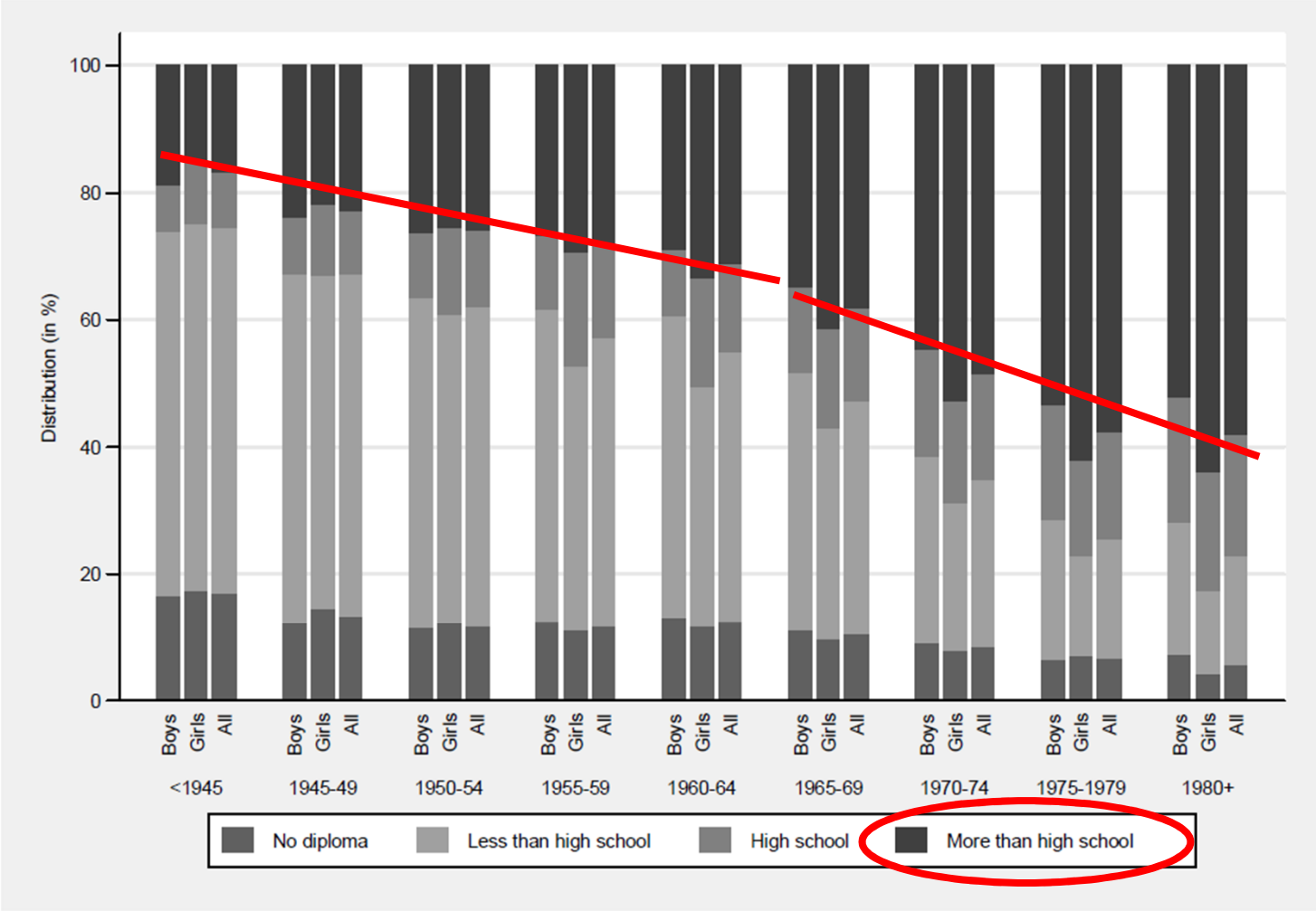

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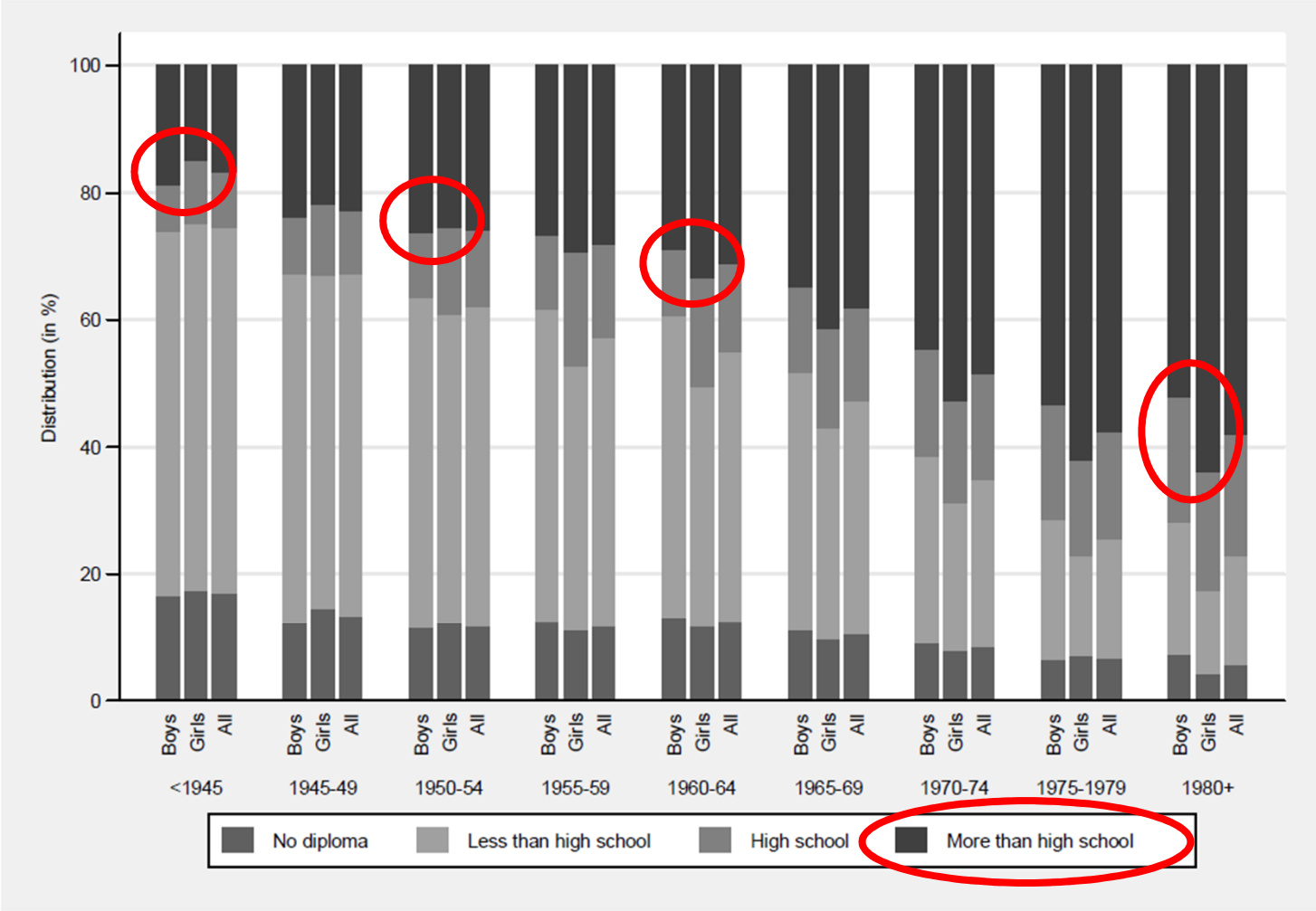

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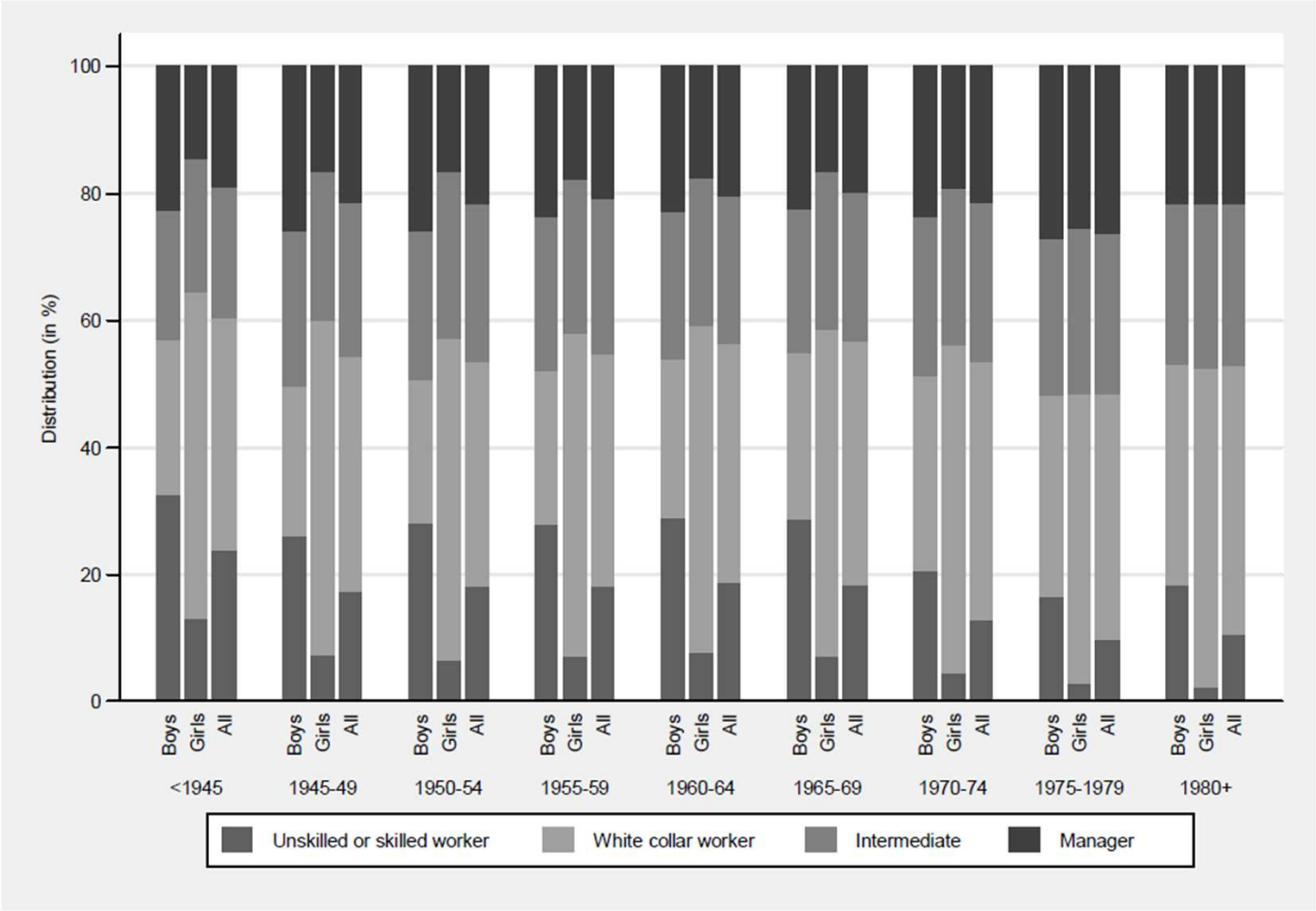
(8) Family resources and birth order

Figure 2. Occupation of children, by birth cohort and gender



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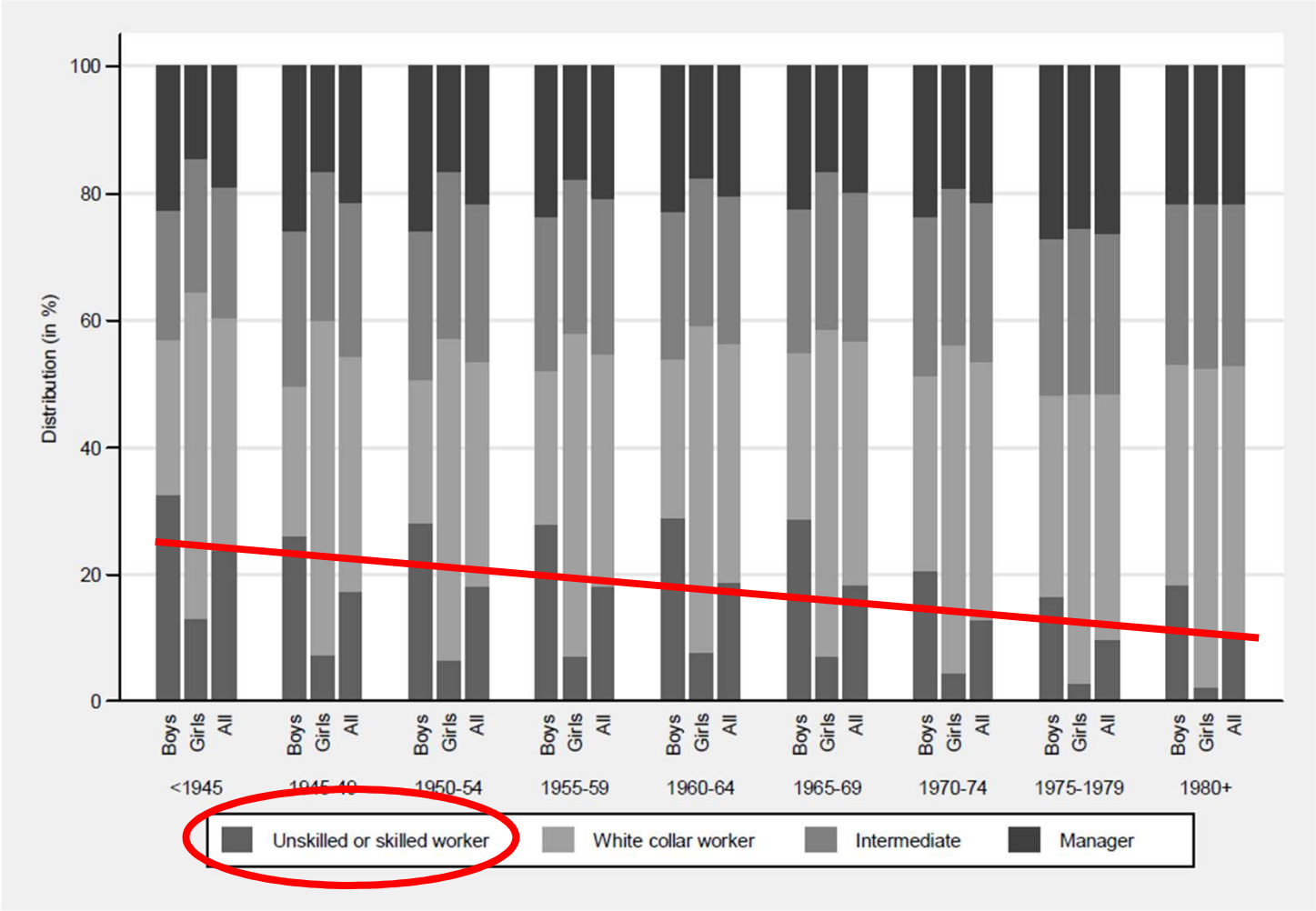

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(8) Family resources and birth order

age effect

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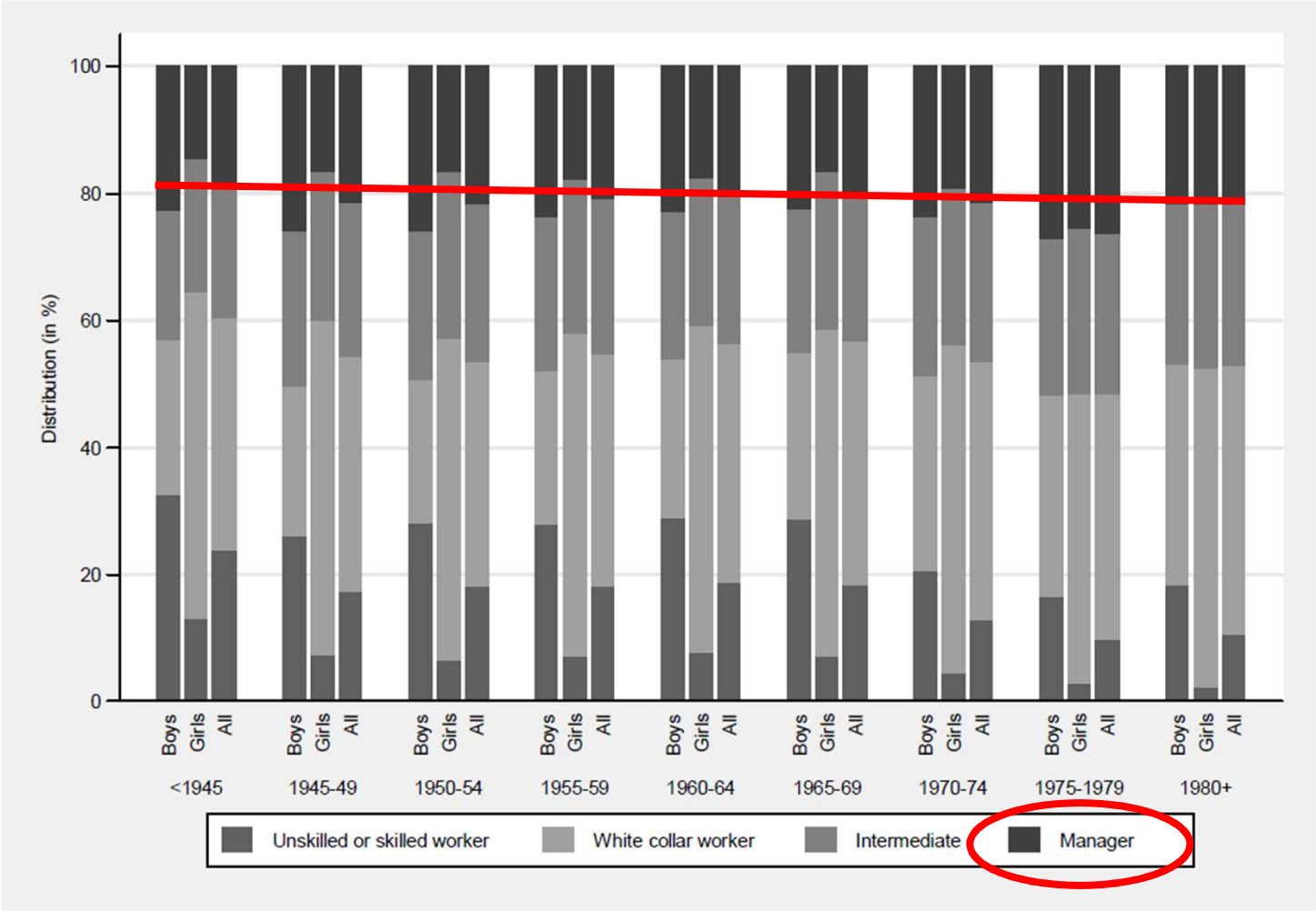

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(9) Family resources and birth order

Table 1. Descriptive statistics of the sample

Variables		No education	Less than high school	High school	More than high school	All
		means	means	Means	means	means
Characteristics of children						
Female		0.484	0.456	0.542	0.530	0.499
Age		40.573	40.876	38.023	37.092	39.037
Number of siblings		3.445	2.586	2.013	1.842	2.321
Number of sisters		1.717	1.281	1.013	0.921	1.156
Birth order		2.608	2.198	1.953	1.830	2.071
Characteristics of parents						
Head's age at birth		27.819	27.551	27.993	28.555	28.013
Parents living in couple		0.443	0.549	0.607	0.678	0.594
Lone-parent family		0.487	0.399	0.333	0.270	0.352
Blended family		0.069	0.052	0.060	0.051	0.055
Head's education	No diploma	0.597	0.347	0.193	0.094	0.258
	Primary	0.234	0.371	0.284	0.169	0.270
	Secondary	0.120	0.213	0.312	0.266	0.237
	High school	0.022	0.042	0.107	0.133	0.083
	> High school	0.027	0.027	0.104	0.338	0.152
Family rich (transfers to children)		0.301	0.380	0.459	0.628	0.474
Number of children		4,437	15,869	6,039	15,343	41,688

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

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(10) Family resources and birth order

Table 2. Distribution of education, by size of sibship and birth order

Size of sibship	Birth order	Education				Number of observations
		No diploma	< high school	High school	> high school	
		%	%	%	%	
1	1	7.1	34.0	16.6	42.3	3,775
2	1	5.7	31.6	15.9	46.8	6,764
2	2	6.3	33.4	16.2	44.1	5,756
2	All	6.0	32.4	16.0	45.6	12,520
3	1	7.4	35.2	15.6	41.8	4,173
3	2	7.8	37.3	15.4	39.6	3,840
3	3	8.7	36.6	16.2	38.6	3,119
3	All	7.9	36.3	15.7	40.1	11,132
4	1	10.2	41.5	13.9	34.4	1,740
4	2	12.0	44.2	12.5	31.3	1,664
4	3	10.1	45.4	14.1	30.4	1,519
4	4	12.1	39.5	15.4	33.0	1,305
4	All	11.1	42.8	13.9	32.3	6,228
5	1	16.6	46.5	9.9	27.1	721
5	2	17.3	44.3	12.5	26.0	707
5	3	20.4	45.8	9.8	23.9	681
5	4	18.4	46.4	9.2	26.0	630
5	5	15.6	46.3	12.3	25.7	544
5	All	17.7	45.8	10.7	25.8	3,283
All		10.6	38.1	14.5	36.8	41,688

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(11) Family resources and birth order

- **Empirical strategy: random effect ordered model**
  - The propensity of being educated is E_{ji}^{*} (with j for family and i for child)
  - Linear specification for the latent educational outcome

$$E_{ji}^{*} = X_{ji}\beta + \delta_j + \varepsilon_{ji}$$

with X_{ji} a set of family characterisics, δ_j a family-specific effect, $\delta_j \sim N(0; \sigma_\delta^2)$, $\varepsilon_{ji} \sim N(0; 1)$

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  - E_{ji}^{*} is unobserved. The observed level of education E_{ji} is:

$$E_{ji} = k \text{ si } \mu_{k-1} < E_{ji}^{*} \leq \mu_k$$

$$\Pr(E_{ji} = k) = \Phi(\mu_k - X_{ji}\beta - \delta_j) - \Phi(\mu_{k-1} - X_{ji}\beta - \delta_j)$$

  - For a given sibship,

$$\Pr\left(E_{j1}, \ldots E_{jN_j}\right) = \int_{-\infty}^{+\infty} \prod_{i=1}^{N_j} \left[\Phi(\mu_k - X_{ji}\beta - \delta_j) - \Phi(\mu_{k-1} - X_{ji}\beta - \delta_j)\right] \phi(\delta_j) d\delta_j$$

(12) Family resources and birth order

- **Problem of censoring in the 1992 survey**
  - Five categories in the 1998-2004-2010 surveys:
    - no diploma ($E_{ji} = 1$), less than high school ($E_{ji} = 2$), high school ($E_{ji} = 3$), undergraduate ($E_{ji} = 4$), and graduate or postgraduate ($E_{ji} = 5$)
  - In the 1992 survey, only one category above high school for children living on their own. These children are characterized by either $E_{ji} = 4$ or $E_{ji} = 5$, thus $E_{ji} \geq 4$
  - Censored observations: $\Pr(E_{ji} \geq k | \delta_j) = 1 - \Phi(\mu_{k-1} - X_{ji}\beta - \delta_j)$

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  - Censored observations: $\Pr(E_{ji} \geq k | \delta_j) = 1 - \Phi(\mu_{k-1} - X_{ji}\beta - \delta_j)$
  - Let $\mathbb{I}_{ji} = 0$ for children living on their own interviewed in 1992 and having more than high school:

$$\Pr\left(E_{j1}, \dots, E_{jN_j}\right) = \int_{-\infty}^{+\infty} \prod_{i=1}^{N_j} \left\{ \begin{array}{c} \mathbb{I}_{ji} * \left[\Phi\left(\mu_k - X_{ji}\beta - \delta_j\right) - \Phi\left(\mu_{k-1} - X_{ji}\beta - \delta_j\right)\right] \\ + \left(1 - \mathbb{I}_{ji}\right) * \left[1 - \Phi\left(\mu_{k-1} - X_{ji}\beta - \delta_j\right)\right] \end{array} \right\} \phi(\delta_j) d\delta_j$$

➔ **Crucial assumption: family characteristics X_{ji} do not depend on δ_j**

(13) Family resources and birth order

- **Random versus fixed effects: use of a minimum distance estimator to estimate a fixed effect ordered model (Das and van Soest, 1999, JEBO)**
  - E_{ji} is converted in a set of dummy variables E_{ji}^{k}
    - for each level of education $k = 2, \dots, K$, E_{ji}^{k} is such that $E_{ji}^{k} = 1$ if $E_{ji} \geq k$ and $E_{ji}^{k} = 0$ if $E_{ji} < k$.
  - Step 1. Estimation of $K - 1$ conditional fixed effect models provides efficient estimates of the corresponding vectors of parameters β^{k}.

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  - Step 1. Estimation of $K-1$ conditional fixed effect models provides efficient estimates of the corresponding vectors of parameters β^k.

  - Step 2. A classical minimum distance estimator is implemented to form a unique vector β from $(\beta^2, \dots, \beta^K)$. The solution of $\min_\beta \left(\hat{\beta}^{2\prime} - \beta', \dots, \hat{\beta}^{K\prime} - \beta'\right) \Omega^{-1} \left(\hat{\beta}^{2\prime} - \beta', \dots, \hat{\beta}^{K\prime} - \beta'\right)'$ is

$$\hat{\beta}^{DM} = (H'\Omega^{-1}H)^{-1}H'\Omega^{-1}\hat{\vartheta}, \text{ with } \hat{\vartheta} = \left(\hat{\beta}^{2\prime}, \dots, \hat{\beta}^{K\prime}\right).$$

  - The matrix H is obtained by stacking $K-1$ identity matrix whose dimension is equal to the number of parameters of $\hat{\beta}^k$. Covariance matrix is $\text{var}(\hat{\beta}^{DM}) = \left(H'\widehat{\Omega}^{-1}H\right)^{-1}$

- **Random or fixed effects ? The two previous estimators are not nested**

(14) Family resources and birth order

- **Presentation of selected results on:**
  1) Education
  2) Occupation
  3) Financial transfers

- **Before, discussion on the measurement of birth order**

(15) Family resources and birth order

- **Measuring birth order: potential spurious correlation between rank and sibship size**

(15) Family resources and birth order

- **Measuring birth order: potential spurious correlation between rank and sibship size**

(1) Absolute birth order

Absolute rank	Size of the sibship									
	1	2	3	4	5	6	7	8	9	10
First-born	1	1	1	1	1	1	1	1	1	1
:		2	2	2	2	2	2	2	2	2
:			3	3	3	3	3	3	3	3
:				4	4	4	4	4	4	4
:					5	5	5	5	5	5
:						6	6	6	6	6
:							7	7	7	7
:								8	8	8
:									9	9
Last-born										10
Mean	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5

problematic !

(15) Family resources and birth order

- **Measuring birth order: potential spurious correlation between rank and sibship size**

(1) Absolute birth order

Absolute rank	Size of the sibship									
	1	2	3	4	5	6	7	8	9	10
First-born	1	1	1	1	1	1	1	1	1	1
:		2	2	2	2	2	2	2	2	2
:			3	3	3	3	3	3	3	3
:				4	4	4	4	4	4	4
:					5	5	5	5	5	5
:						6	6	6	6	6
:							7	7	7	7
:								8	8	8
:									9	9
Last-born										10
Mean	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5

problematic !

(2) Normalized rank

(Booth and Kee, 2009)

$$R_{norm} = \frac{R_{abs}}{(N+1)/2}$$

Normalized rank	Size of the sibship									
	1	2	3	4	5	6	7	8	9	10
First-born	1.000	0.667	0.500	0.400	0.333	0.286	0.250	0.222	0.200	0.182
:		1.333	1.000	0.800	0.667	0.571	0.500	0.444	0.400	0.364
:			1.500	1.200	1.000	0.857	0.750	0.667	0.600	0.545
:				1.600	1.333	1.143	1.000	0.889	0.800	0.727
:					1.667	1.429	1.250	1.111	1.000	0.909
:						1.714	1.500	1.333	1.200	1.091
:							1.750	1.556	1.400	1.273
:								1.778	1.600	1.455
:									1.800	1.636
Last-born										1.818
Mean	1	1	1	1	1	1	1	1	1	1

ok !

(16) Family resources and birth order

- **List of family controls**

  - Child:
    - Gender
    - Birth cohorts
    - Number of siblings
    - Number of sisters
    - Birth order

  - Parents:
    - Head's age at birth
    - Lone-parent family
    - Blended family
    - Head's education
    - Family rich (transfers to adult children, if any)
    - Regional and size of urban unit dummies

(17) Family resources and birth order

Table 3. Random effect ordered Probit estimates of education

Variables		(1)	(2)	(3)
Characteristics of children				
Female		0.209***	0.210***	0.211***
Birth cohort	<1945	ref	ref	ref
	1945-1949	0.125***	0.122***	0.116***
	1950-1954	0.202***	0.225***	0.222***
	1955-1959	0.221***	0.261***	0.252***
	1960-1964	0.162***	0.220***	0.206***
	1965-1969	0.288***	0.360***	0.350***
	1970-1974	0.482***	0.566***	0.562***
	1975-1979	0.655***	0.729***	0.728***
	1980+	0.560***	0.622***	0.626***
Number of siblings		-0.158***	-0.117***	-0.172***
Number of sisters		0.049***	0.051***	0.051***
Absolute birth order			-0.110***	
Birth order independent of family size				-0.341***
Characteristics of parents				
Head's age at birth		0.011***	0.027***	0.030***
Lone-parent family		-0.217***	-0.173***	-0.166***
Blended family		-0.495***	-0.485***	-0.482***
Head's education	No diploma	ref	ref	ref
	Primary	0.561***	0.570***	0.573***
	Secondary	0.984***	0.990***	0.991***
	High school	1.614***	1.619***	1.620***
	> High school	2.296***	2.276***	2.273***
Family rich (transfers to children)		0.389***	0.385***	0.385***
Number of children		41,688	41,688	41,688
Number of families		18,219	18,219	18,219
Log likelihood		-49,725.7	-49,630.4	-49,598.3

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

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Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

(18) Family resources and birth order

- **To summarize,**

➔ Benefits of being a girl, born in recent cohorts, not having many siblings, having sisters rather than brothers, being among the first-borns

➔ Disadvantage of being from a lone-parent or blended family, benefits of having educated and rich parents

- **Robustness**
  - Fixed effect ordered estimates
  - Random and fixed estimates by family size

(19) Family resources and birth order

Table 4. Fixed effect ordered estimates of education (minimum distance estimator)

Variables		(1)	(2)	(3)
Characteristics of children				
Female		0.299***	0.299***	0.302***
Birth cohort	<1945	ref	ref	ref
	1945-1949	0.149*	0.294***	0.364***
	1950-1954	0.268***	0.541***	0.672***
	1955-1959	0.312***	0.711***	0.892***
	1960-1964	0.222**	0.752***	0.992***
	1965-1969	0.418***	1.073***	1.380***
	1970-1974	0.683***	1.460***	1.842***
	1975-1979	0.885***	1.769***	2.227***
	1980+	0.750***	1.749***	2.303***
Absolute birth order			-0.110***	
Birth order independent of family size				-0.424***

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

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(20) Family resources and birth order

Table. Random effect and fixed effect ordered Probit estimates of education, by family size

Size of the sibship	Two children		Three children		Four children	
	(1A)	(1B)	(2A)	(2B)	(3A)	(3B)
Birth order: first-born	ref	ref	ref	ref	ref	ref
Birth order: second-born	-0.246***	-0.262***	-0.177***	-0.260***	-0.225***	-0.428***
Birth order: third-born			-0.335***	-0.450***	-0.291***	-0.552***
Birth order: fourth-born					-0.314***	-0.500***
Birth order: fifth-born						
Family controls	YES	YES	YES	YES	YES	YES
Random/fixed effects	RANDOM	FIXED	RANDOM	FIXED	RANDOM	FIXED
Number of children	12,520		11,132		6,228	
Number of families	6,862		4,262		1,792	
Log likelihood	-15,555.8		-13,432.5		-7,105.5	

Source: author's calculations, Insee Wealth surveys 1992 – 1998 – 2004 – 2010.

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Source: author's calculations, Insee Wealth surveys 1992 – 1998 – 2004 – 2010.

(21) Family resources and birth order

- **Potential influence of birth order on occupation**
  - Indirect effect of birth order through education
    - Birth order should no longer be significant once education is controlled for
  - Direct effect of birth order

(22) Family resources and birth order

Table 5. Random effect and fixed effect ordered Probit estimates of occupation

Variables		(1)	(2)	(3)	(4)	(5)
Characteristics of children						
Female		0.186***	-0.001	0.018	0.015	-0.102***
Birth cohort	<1945	ref	ref	ref	ref	ref
	1945-1949	0.250***	0.118**	0.117**	0.340***	0.273**
	1950-1954	0.282***	0.039	0.030	0.464***	0.248*
	1955-1959	0.261***	-0.085*	-0.098**	0.465***	0.154
	1960-1964	0.234***	-0.188***	-0.227***	0.515***	0.119
	1965-1969	0.182***	-0.379***	-0.428***	0.490***	-0.086
	1970-1974	0.288***	-0.474***	-0.534***	0.654***	-0.129
	1975-1979	0.400***	-0.530***	-0.624***	0.723***	-0.177
	1980+	0.298***	-0.679***	-0.789***	0.673***	-0.362
Number of siblings		-0.173***	-0.060***	-0.043***		
Number of sisters		-0.009	-0.027**	-0.023**		
Birth order independent of family size		-0.221***	-0.053***	-0.058**	-0.502***	-0.349***
Education	No education		Ref	Ref		Ref
	Less than high school		0.500***	0.445***		0.489***
	High school		1.411***	1.275***		1.530***
	More than high school		2.724***	2.427***		3.341***
Parental controls		NO	NO	YES		
Random/fixed effects		RANDOM	RANDOM	RANDOM	FIXED	FIXED
Number of children		31,701	31,701	31,701		
Number of families		16,176	16,176	16,176		
Log likelihood		-39,169.7	-32,878.8	-32,234.5		

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	1950-1954	0.282***	0.039	0.030	0.464***	0.248*
	1955-1959	0.261***	-0.085*	-0.098**	0.465***	0.154
	1960-1964	0.234***	-0.188***	-0.227***	0.515***	0.119
	1965-1969	0.182***	-0.379***	-0.428***	0.490***	-0.086
	1970-1974	0.288***	-0.474***	-0.534***	0.654***	-0.129
	1975-1979	0.400***	-0.530***	-0.624***	0.723***	-0.177
	1980+	0.298***	-0.679***	-0.789***	0.673***	-0.362
Number of siblings		-0.173***	-0.060***	-0.043***		
Number of sisters		-0.009	-0.027**	-0.023*		
Birth order independent of family size		-0.221***	-0.053***	-0.058**	-0.502***	-0.349***
Education	No education		Ref	Ref		Ref
	Less than high school		0.500***	0.445***		0.489***
	High school		1.411***	1.275***		1.530***
	More than high school		2.724***	2.427***		3.341***
Parental controls		NO	NO	YES		
Random/fixed effects		RANDOM	RANDOM	RANDOM	FIXED	FIXED
Number of children		31,701	31,701	31,701		
Number of families		16,176	16,176	16,176		
Log likelihood		-39,169.7	-32,878.8	-32,234.5		

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

(22) Family resources and birth order

Table 5. Random effect and fixed effect ordered Probit estimates of occupation

Variables		(1)	(2)	(3)	(4)	(5)
Characteristics of children						
Female		0.186***	-0.001	0.018	0.015	-0.102***
Birth cohort	<1945	ref	ref	ref	ref	ref
	1945-1949	0.250***	0.118**	0.117**	0.340***	0.273**
	1950-1954	0.282***	0.039	0.030	0.464***	0.248*
	1955-1959	0.261***	-0.085*	-0.098**	0.465***	0.154
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Random/fixed effects		RANDOM	RANDOM	RANDOM	FIXED	FIXED
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Log likelihood		-39,169.7	-32,878.8	-32,234.5		

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

(23) Family resources and birth order

Table. Random effect and fixed effect ordered Probit estimates of occupation, by family size

Size of the sibship	Two children		Three children		Four children	
	(1A)	(1B)	(2A)	(2B)	(3A)	(3B)
Birth order: first-born	ref	ref	ref	ref	ref	ref
Birth order: second-born	-0.088***	-0.245***	-0.032	-0.123*	0.046	-0.050
Birth order: third-born			-0.084**	-0.308***	0.003	-0.172
Birth order: fourth-born					-0.008	-0.325*
Parental characteristics	YES	YES	YES	YES	YES	YES
Random/fixed effects	RANDOM	FIXED	RANDOM	FIXED	RANDOM	FIXED
Number of children	9,844		8,593		4,691	
Number of families	6,160		3,987		1,705	
Log likelihood	-10,205.5		-8,696.6		-4,704.6	

Source: author's calculations, Insee Wealth surveys 1992 – 1998 – 2004 – 2010.

(23) Family resources and birth order

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(24) Family resources and birth order

- **To summarize: first-born children are more educated and reach better occupations on average compared to later-born siblings**
- **Since these characteristics translate into higher earnings, this entails financial inequalities between siblings**
- **So do parents attempt to reduce these differences through financial transfers given over the life cycle ?**
- **Link with the literature on models of private transfers**
  - See Laferrère and Wolff (2006, Handbook's chapter)
  - Under altruism, parents should give more to their less well-off children

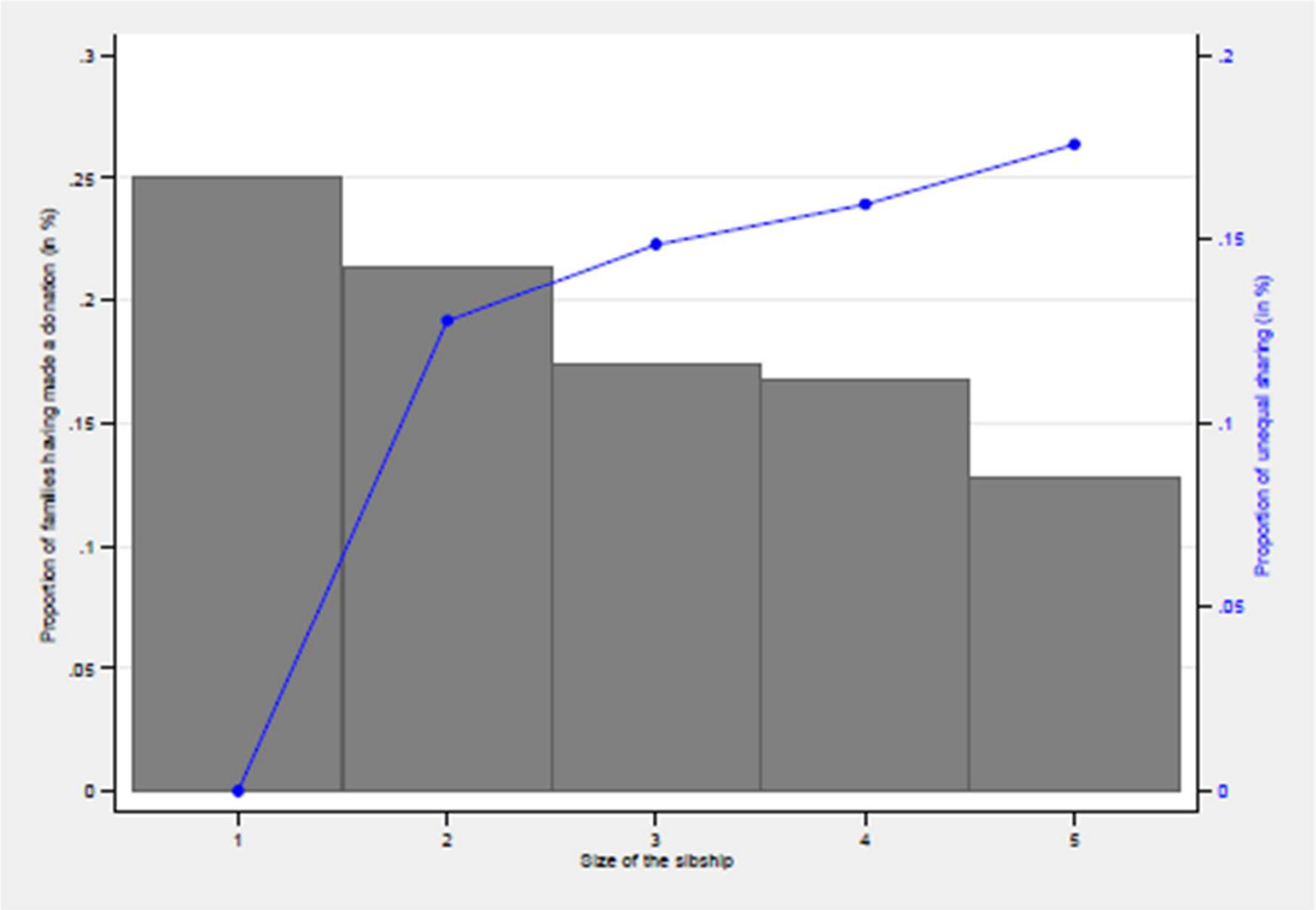
(25) Family resources and birth order

- **Focus on donations in the 1998, 2004 and 2010 surveys**
  - Information on which children within the sibship have received such gifts
  - Sample made of 32071 children aged at least 24 and leaving by their own (14322 families)
  - Shortcoming: only a subset of all transfers flowing to children
- **Proportion of parents have made a donation to at least one adult child is around 20% …**
- **… while proportion of children having benefitted from a parental donation is around 18%**
- **The difference between the two gift rates sheds light on the intensity of unequal sharing**

=> Equal sharing sounds like a very frequent decision in France !

(26) Family resources and birth order

Figure 3. The intra-household allocation of private transfers



Source : authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

(27) Family resources and birth order

- **Negative correlation between the proportion of families making some donations and family size**
- **Unequal sharing is more frequently observed when the sibship size increases**
  - Parents cannot afford givin money to all of their children
- **Any role of birth order ?**

(28) Family resources and birth order

Table 6. Random effect and fixed effect Probit estimates of transfer receipt

Variables		(1)	(2)	(3)	(4)
Characteristics of children					
Female		-0.176*	-0.090	-0.027	-0.025
Age		0.536***	0.472***	0.184	0.173
Age squared (/100)		-0.401***	-0.363***	-0.339***	-0.329***
Number of siblings		-1.325***	-0.874***		
Number of sisters		-0.152*	-0.050		
Birth order independent of family size		-0.986***	-0.883***	-1.922***	-1.930***
Education	No education	ref	ref	ref	ref
	Less than high school		0.387*		0.494
	High school		0.435**		0.534
	More than high school		0.561***		0.212
Characteristics of parents					
Head's age at birth		0.238***	0.196***		
Lone-parent family		-0.803***	-0.657***		
Blended family		-2.499***	-2.181***		
Head's education	No diploma	(-7.83)	(-6.44)		
	Primary	0.403*	0.228		
	Secondary	1.278***	0.898***		
	High school	2.406***	1.615***		
	> High school	5.003***	4.935***		
Random/fixed effects		RANDOM	RANDOM	FIXED	FIXED
Number of children		32071	32071	814	814
Number of families		14322	14322	299	299
Log likelihood		-7356.0	-7351.5	-251.3	-250.0

Source: authors' calculations, INSEE Wealth surveys 1992 – 1998 – 2004 – 2010.

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(29) Family resources and birth order

- **Main results**
  1) Being early in the birth order confers an educational and occupational advantage in France
  2) First-born children cumulate the benefits of achieving higher levels of education, better occupations and receipt of parental donations

- **Results challenging theories that explain the well-documented birth order effect advantage through mechanical effects**
  - For instance, first borns necessarily spend more time with exclusive adult surroundings and benefit longer from undilited parental resources
  - However, parents do have the opportunity to equalize donations later in life

  $\Rightarrow$ While parents could offset the first born effect through asymmetric donations, they magnify the first born advantage through transfers

- **Perspectives for future research on intra-family transfers**
  - Information on financial amounts needed
  - Role of birth order on bequest (but equal sharing is the rule in France)
  - Care towards elderly parents: one may expect first born children to care more for their elderly parents (initial invesment as a delayed exchange ?)
  - Deeper look at strategic interactions between siblings