
Education and Fertility in the context of rising inequality

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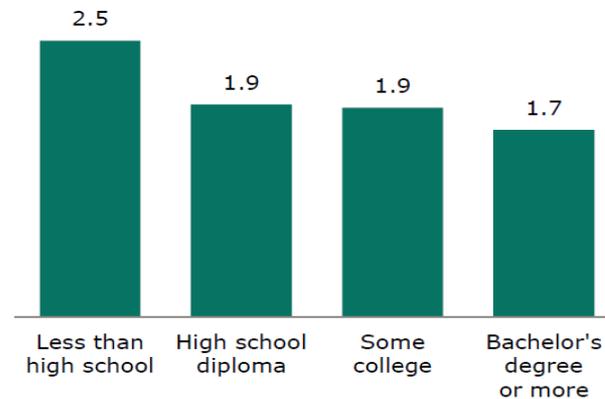
Outline

- Educational gradient for fertility and fertility intentions?

Towards Convergence?
Temporary or permanent?

Lifetime Births by Educational Attainment, 2010

Children ever born among women ages 40 to 44



Source: Statistics calculated using two-year average of 2008 and 2010 Current Population Survey June Supplement data

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Outline

- Educational gradient for fertility and fertility intentions?
- Sources of inequality
 - 1) Unequal Labor Markets

Low /mid educated hardest hit by unemployment and disappearing middle jobs

Gender wage gaps persist even among highest educated
 - 2) Cultural transmission –immigrants

Some convergence (particularly for 2nd gen and in more selective regimes.) Convergence within education group with natives
 - 3) Unequal parental resources - *diverging destinies*

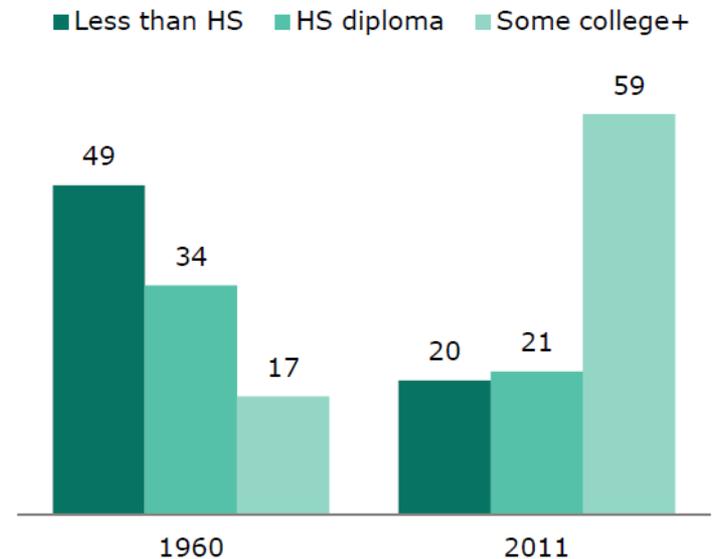
Policy to avoid Intergenerational persistence
- Implications for the future

Fertility rates across educational groups converging?

- **Compositional changes and Selection:**
 - The majority of US women ages 15-44 have some college
 - The majority of US mothers are now college educated.
 - **College educated mothers are now “less selected”?**
Less educated mothers more selected?

Educational Attainment of Women in 1960 and 2011

% among women ages 15 to 44

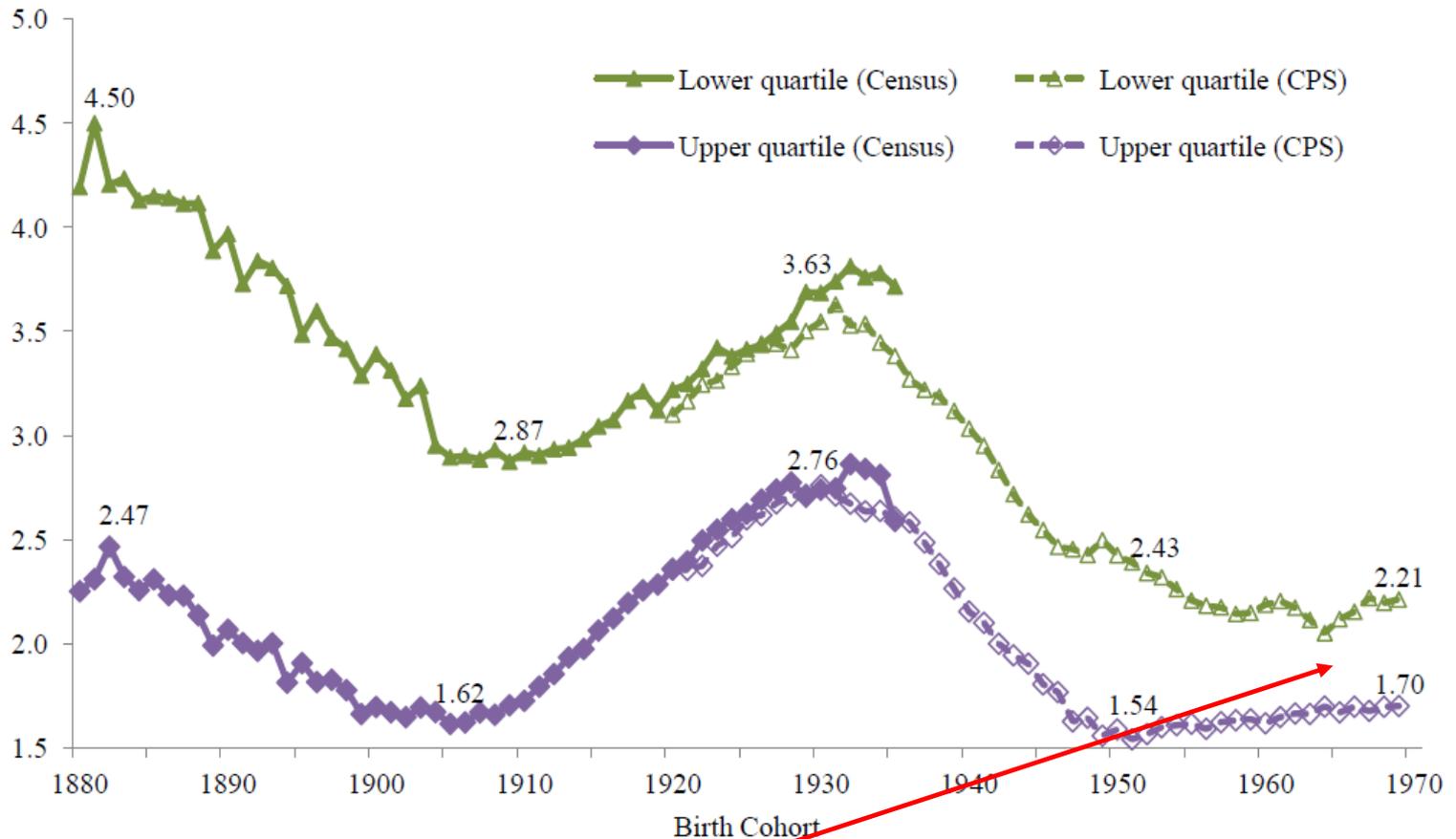


Source: Pew Research Center analysis of 2011 American Community Survey (1% IPUMS) and 1960 Decennial Census (1% IPUMS)

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Towards convergence? US Fertility by education (Bailey et al 2013)

Figure 9. Children Ever Born, by Education Quantile and Birth Cohort

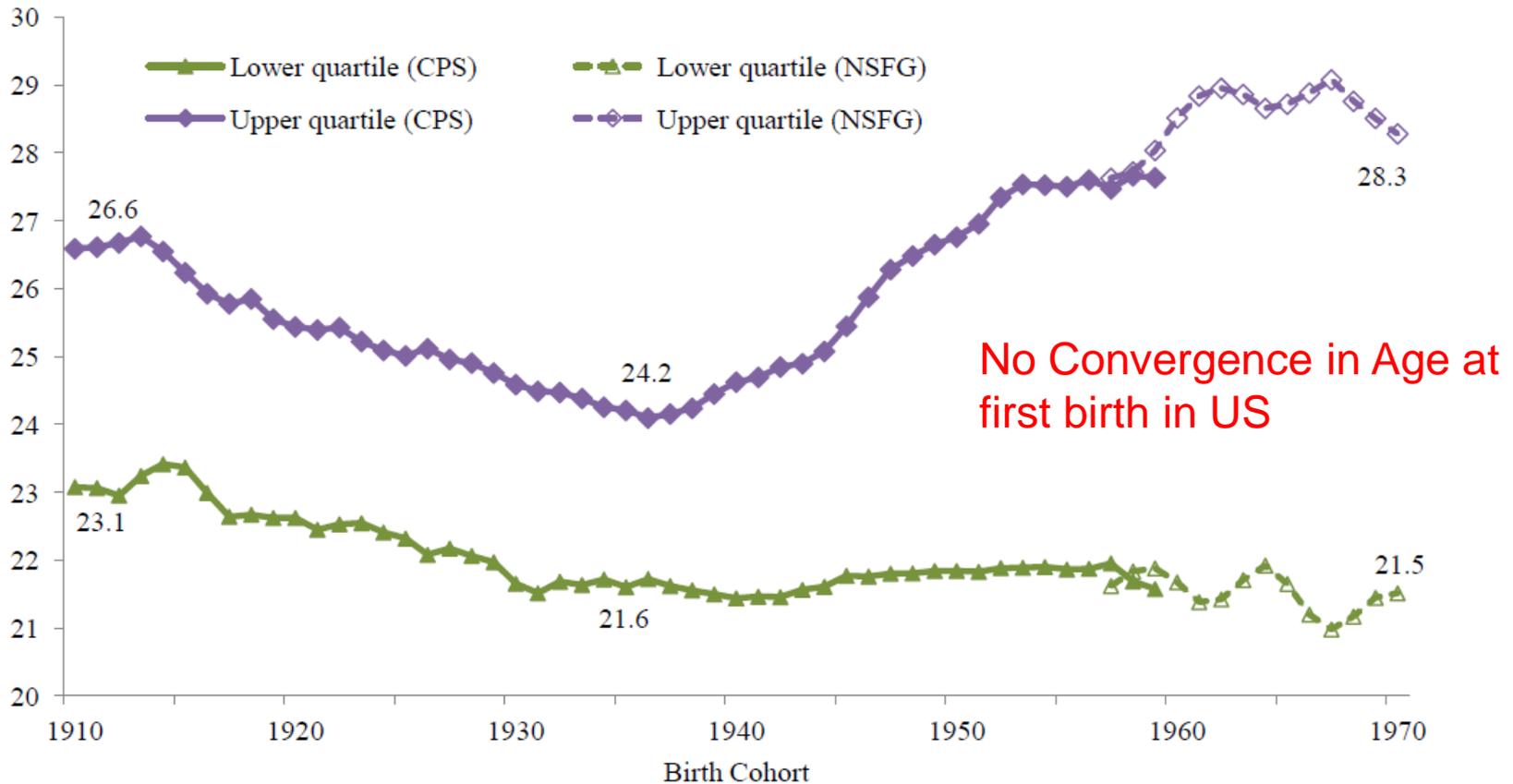


Convergence over time in US

Childlessness rates also getting closer (21% upper quart education vs 14.5% lower educational quartile, birth cohort 1970).

US Age at first birth by education (Bailey et al 2013)

Figure 13. Age at First Birth, by Education Quantile and Birth Cohort



The figure plots age at first birth among women ages 36+, by birth cohort, for the June CPS (1910 through 1959 cohorts) and the same statistic for women in the NSFG (1957 through 1970 cohorts). See text for education group definitions. All computations use the recommended population weights. The June CPS series use 3-cohort moving averages and NSFG series are 5-cohort moving averages. Sources: 1979-1995 June CPS and 1995-2010 NSFG.

Fertility rates across educational groups converging?

- Economic uncertainty: the low educated, young and migrants hit hardest across OECD countries and ↓fertility.
 - Higher order births seem to show no negative education gradient (Kravdal & Rindfuss 2008 Sweden; Adserà 2011 across EU)
-

Intentions still there...

- Cross-country dispersion in stated preferences is relatively smaller than observed fertility differentials (Bongaarts 2002, Goldstein, Lutz and Testa 2003). High intentions in countries with high education (Testa 2014)

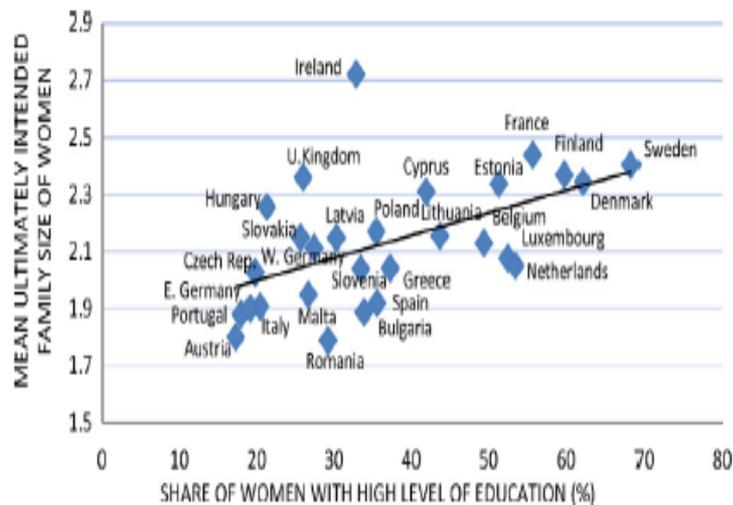


Fig. 3. Cross-country correlation between women's mean ultimately intended family size and the share of highly educated women. Ages 20–45. Note: Pearson's correlation coefficient is equal to 0.5 and statistically significant. Source: Author's elaborations on EB 2011.

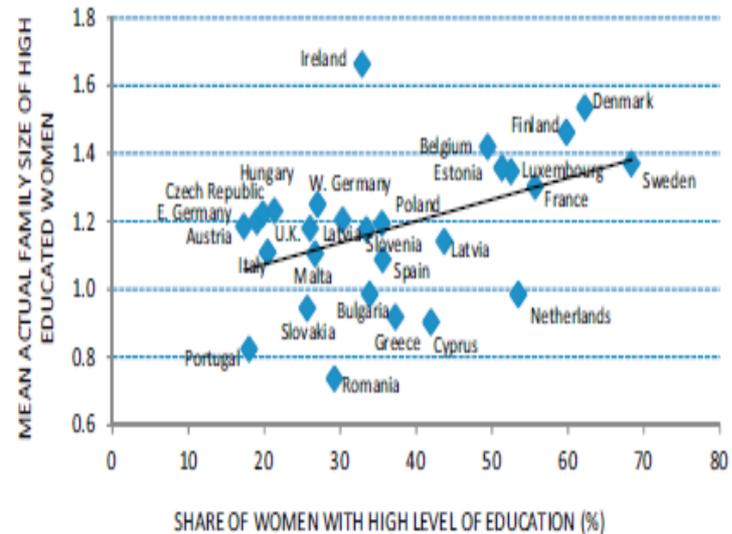


Fig. 4. Cross-country correlation between the mean actual family size of high educated women and the share of highly educated women. Ages 20–45. Note: Pearson's correlation coefficient is equal to 0.5 and statistically significant. Source: Author's elaborations on EB 2011.

1) Unequal Labor Markets

- Labor market conditions impact on fertility
 - Butz and Ward 1979, Kravdal 2002, Mills and Blossfeld 2005, Kreyenfeld 2005, 2009; Goldstein et al 2009, among many. Great review by Sobotka, Skirbekk and Philipov (2011)
 - Low fertility in 1980s-early 2000s, associated with gender gaps in unemployment rates; **long term unemployment, short-term of contracts** (at the individual and aggregate level) (Adserà 2005, 2006, 2011a)
 - Differential impact across education groups (Adserà 2011 b)
-

- 1) Unemployment particularly detrimental for less educated
- 2) Short term contracts delay second births across all groups, slightly more among higher educated (different expectations of likely stability in the job??)

Table 3. Transition to Second Births, 12 European countries (ECHP 1994-2000). Cox Proportional Hazards (Adsera 2011)

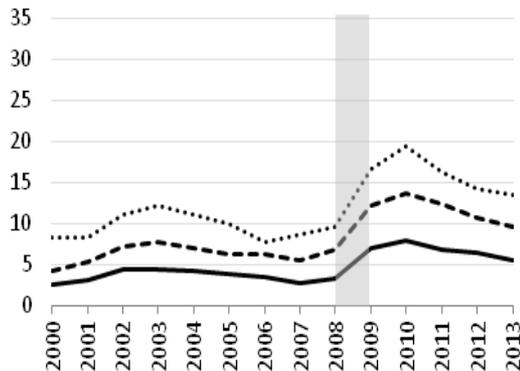
	(1) All	(2) Low Educated	(3) Mid Educated	(4) High Educated	(5) Southern Europe
MODEL A					
<i>Individual (7 month lag)</i>					
No Permanent Contract	-0.194*	-0.156	-0.224+	-0.153	-0.188
<i>Country (last year)</i>					
Female Unemployment rate	-0.042+	-0.113**	-0.006	-0.015	-0.047*
MODEL B					
<i>Individual (7 month lag)</i>					
Very Short Contract	-0.223**	-0.204	-0.159	-0.257+	-0.228+
<i>Country (last year)</i>					
Female Unemployment rate	-0.043+	-0.114**	-0.006	-0.014	-0.047*
Subjects	6,112	2,103	2,354	1,702	2,604
Failures	2,493	725	931	744	853

Note: First births on January 1992 or after.

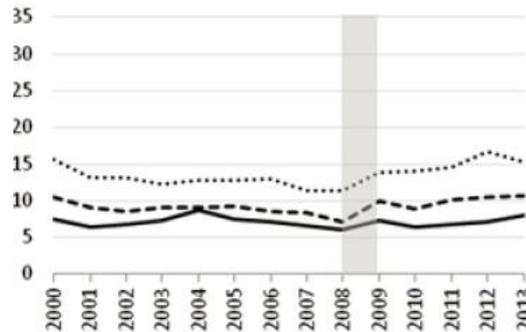
Include demographics, individual type of employment, unemployment, woman and partner education, and income, country level variables (share of government employment and its square, maternity leave, log income per capita) as well as *year, monthly and country dummies*

Unemployment in families by education (Berghammer and Adserà 2015): Rising educational gradient during The Great Recession

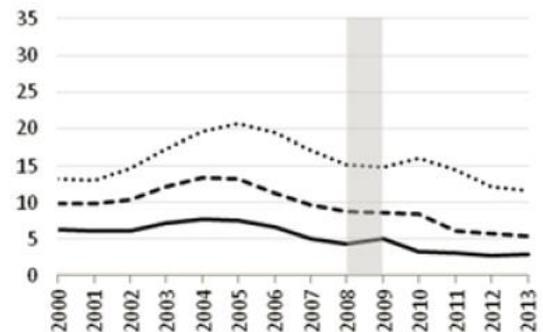
United States



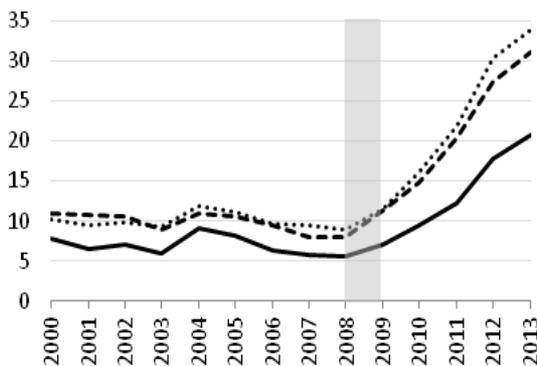
France



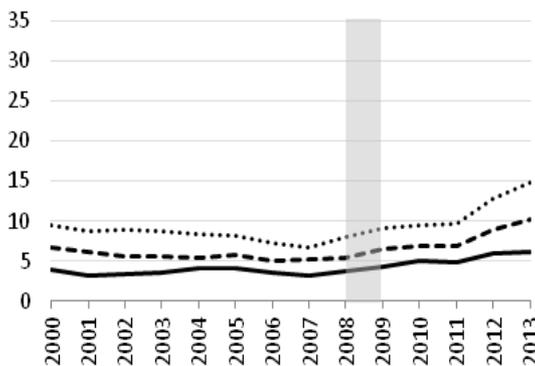
Germany



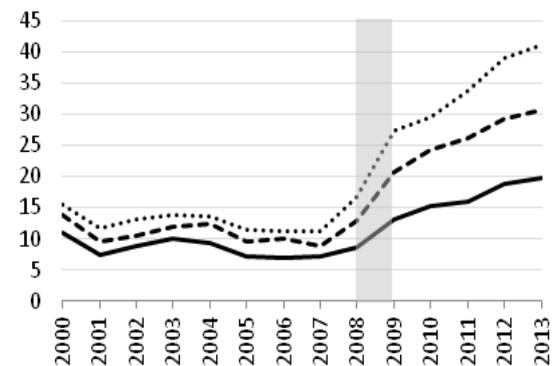
Greece



Italy



Spain

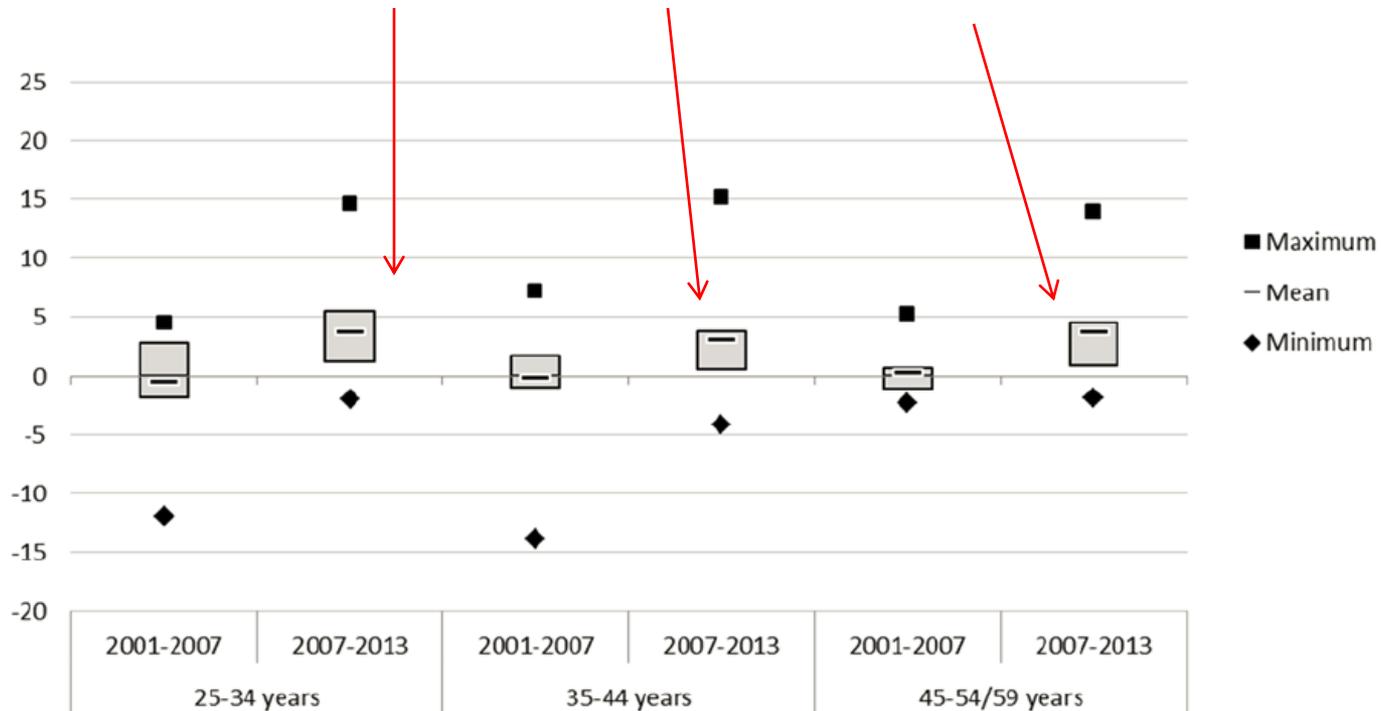


..... Low education
- - - - - Medium education
———— High education

Data: European Labor Force Surveys & US CPS

Berghammer and Adserà (2015): ↑ unemployment educational gradient 2007-2013 for all ages

Figure 2: Absolute change in the unemployment gap between low and highly educated families by age group, 2001-2007 and 2007-2013, summary measures over eleven countries

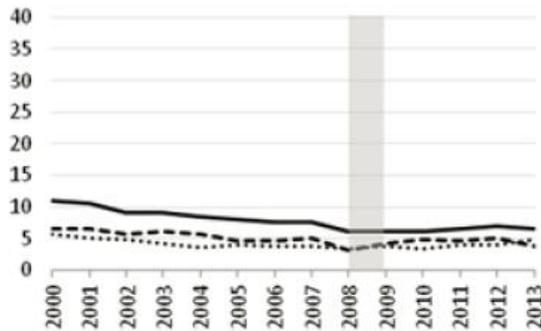


Notes: Grey boxes represent the interquartile range.

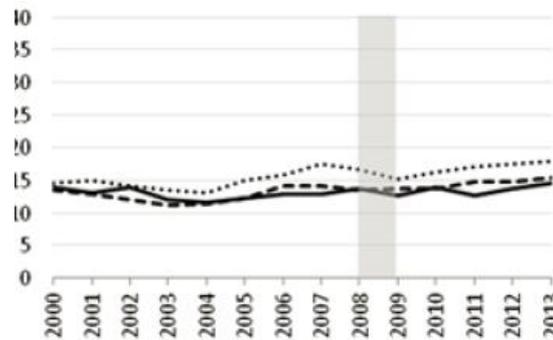
From predicted unemployment using individual data from ELFS in 11 European countries + US CPS data

Temporary employment in families by education (Berghammer and Adserà 2015): more diverse trends

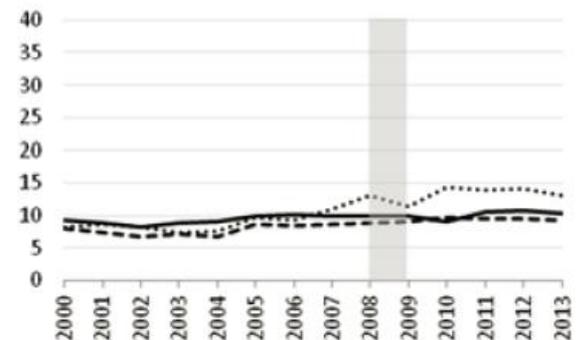
United Kingdom



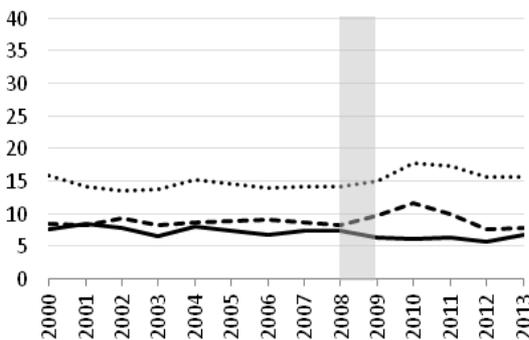
France



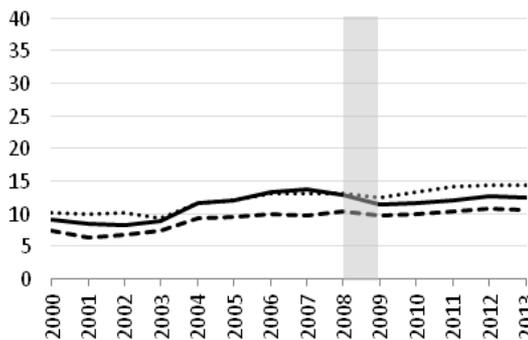
Germany



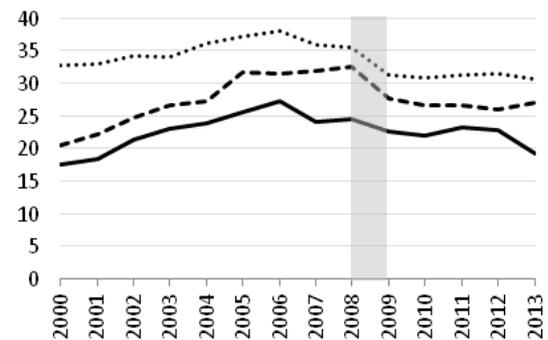
Greece



Italy



Spain



..... Low education

- - - - - Medium education

———— High education

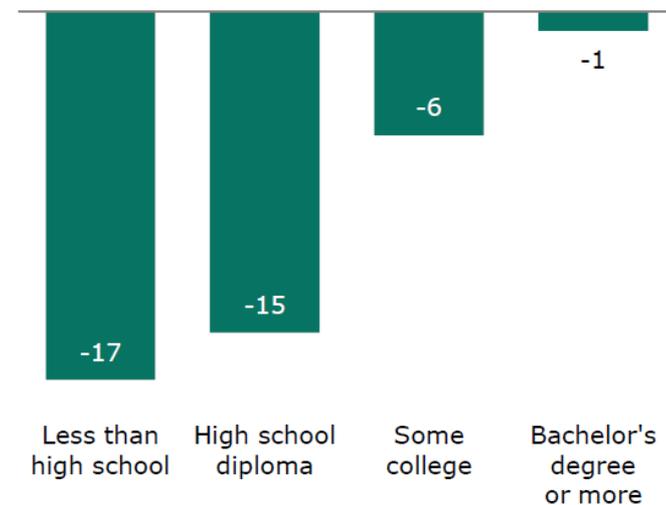
1) Unequal Labor Markets: The impact of the Great Recession

For 2008-2012 only birth rates of those in 40s grew. Drop largest among youngest & less educated; and migrants

Cherlin et al. more **difficult for low and mid-educated men (and women) to sustain good paying stable jobs.**

Since 2008, Largest Declines Among Less Educated New Moms

% change in number of new mothers by educational attainment, 2008-2011



Note: "New moms" are women ages 15 to 44 who gave birth during the 12 months prior to the survey.

Source: Pew Research Center analysis of 2008 and 2011 American Community Surveys (1% IPUMS)

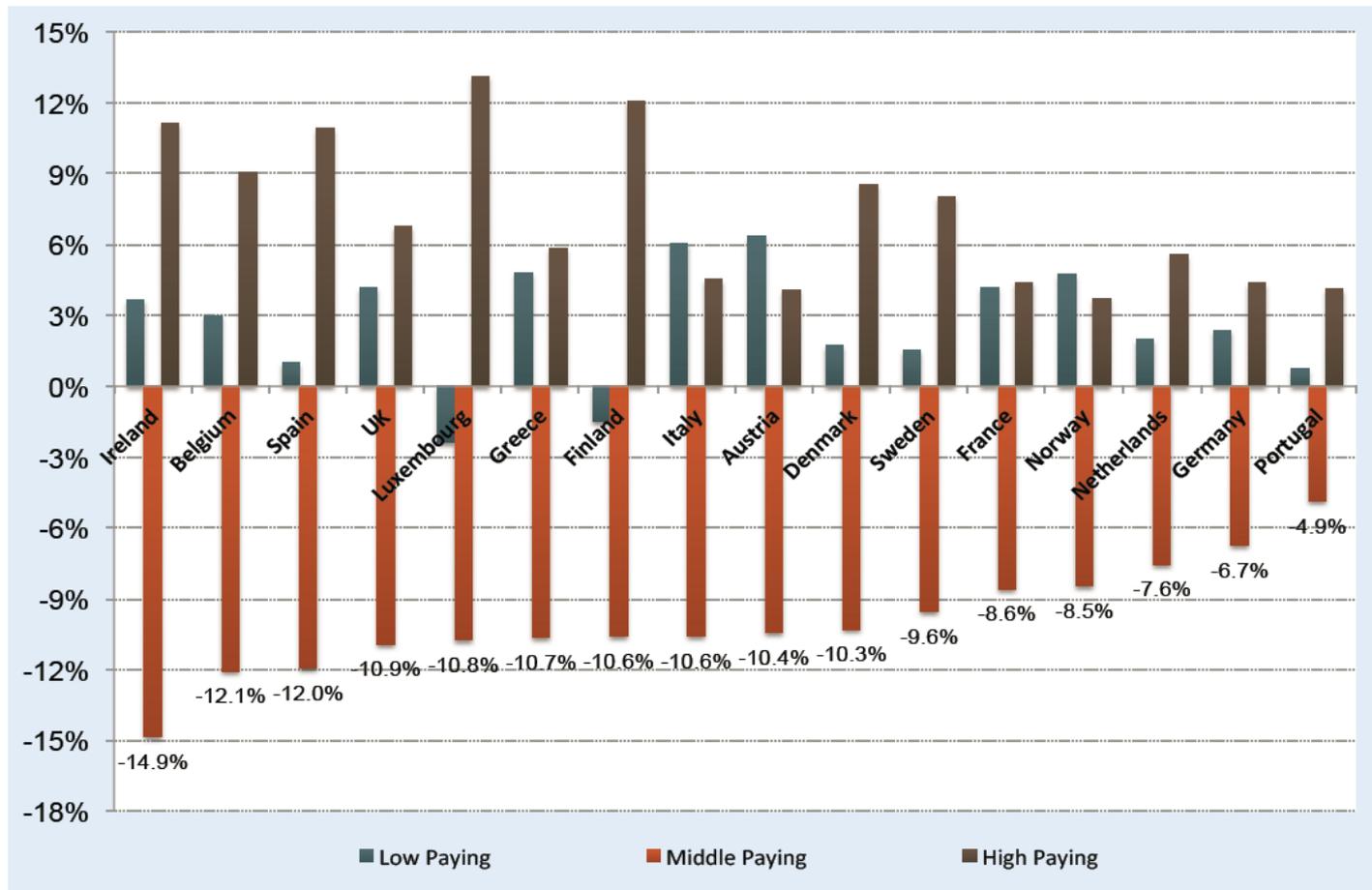
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1) Unequal Labor Markets: Increase inequality in low fertility settings

- **Across** education and **within** education levels.
 - What's behind?
 - Skill bias technological changes
 - Globalization (competing with cheap labor)
 - De-unionization
 - More performance pays-bonuses
 - Structural changes – the rise of robots
 - High tech increases overall productivity, but may have **complementarities with education** and amplify differences; some **routine jobs “in the middle” disappear**. Odd jobs/shifts for low educated.
-

1) Unequal Labor Markets: Changes in occupations across Europe (similar in US) (Autor 2014)

Figure 3. Change in Occupational Employment Shares in Low, Middle and High Wage Occupations in 16 EU Countries, 1993 - 2010



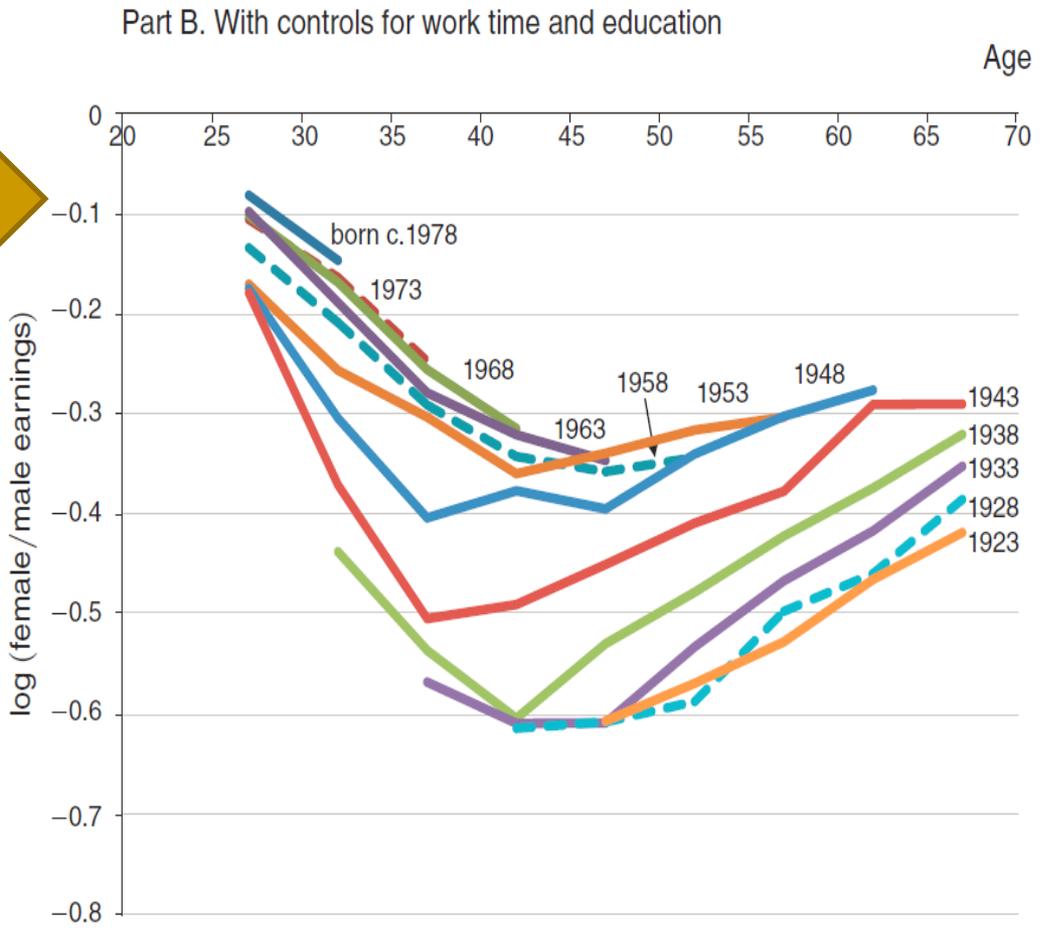
Middle income jobs disappearing and lower wage growth/or ↓

- **Pervasive gender wage gap** (around 77% in US for last decade!)

- Women less hours.

- Even among FT university graduates after taking into account **hours and education**, earnings gap relatively to similarly educated men that grows during childbearing years

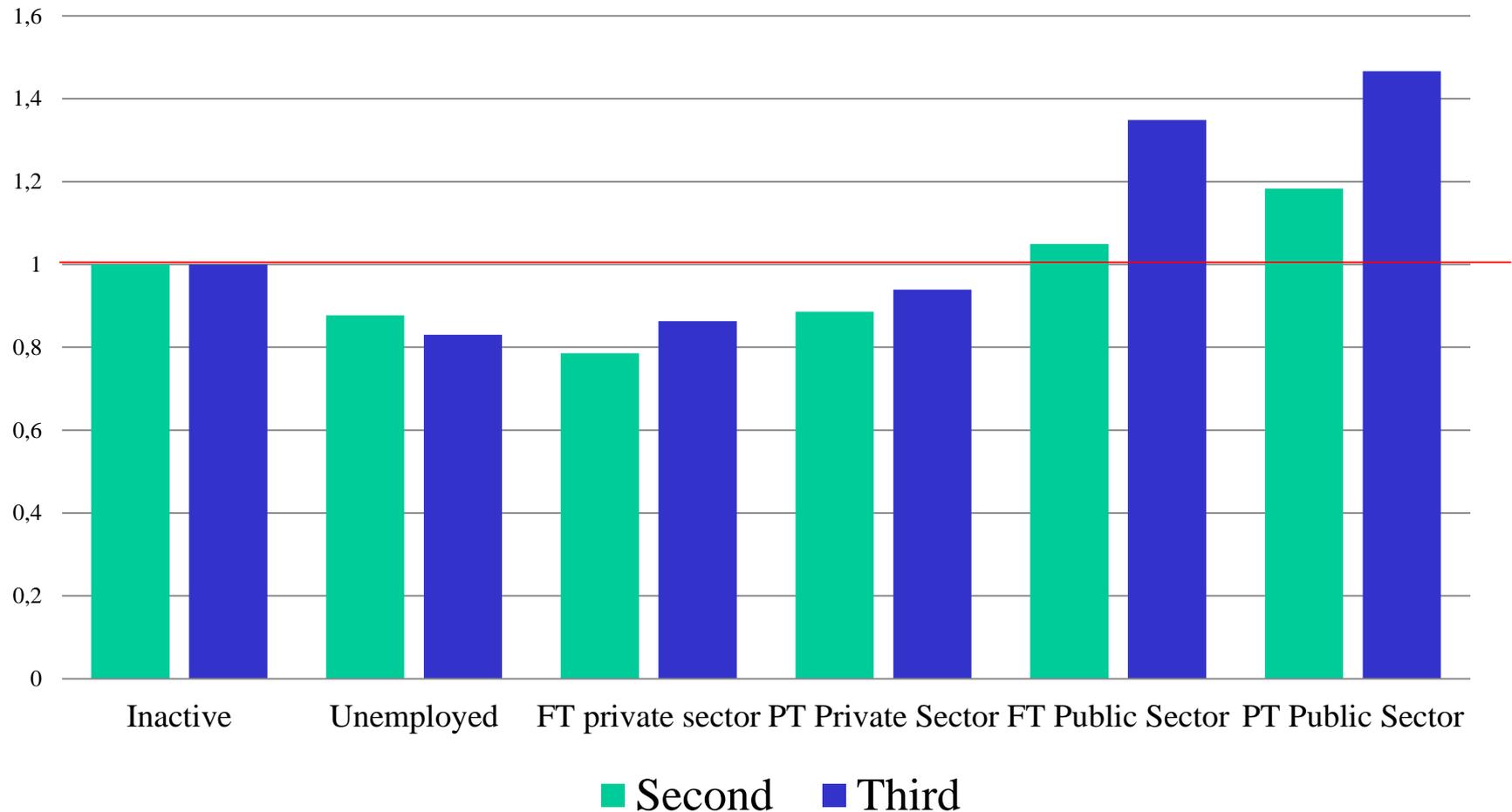
FIGURE 1. RELATIVE EARNINGS OF (FULL-TIME, FULL-YEAR) COLLEGE GRADUATE MEN AND WOMEN FOR SYNTHETIC COHORTS: BORN 1923 TO 1978



1) Unequal Labor Markets: Sectors and fertility?

- Women may self-select in more family friendly jobs....but then not access high end jobs!
- Van Bavel (2010) shows the impact of **field of study** on fertility: entry wage, **(steep) wage profile (experience matters)**, gendered sector and attitudes.
- **Public sector** jobs, higher fertility and lower *actual-intention* gaps: more permanent, relatively lower wages, but less gendered? (Adserà 2006 in Spain, 2011 across Europe). Some linked to **teaching and health care**.

Estimated Hazards to Second & Third births by Woman's labor force status 7-months ago, ECHP 1994-2000, 13 countries (Adserà 2011)

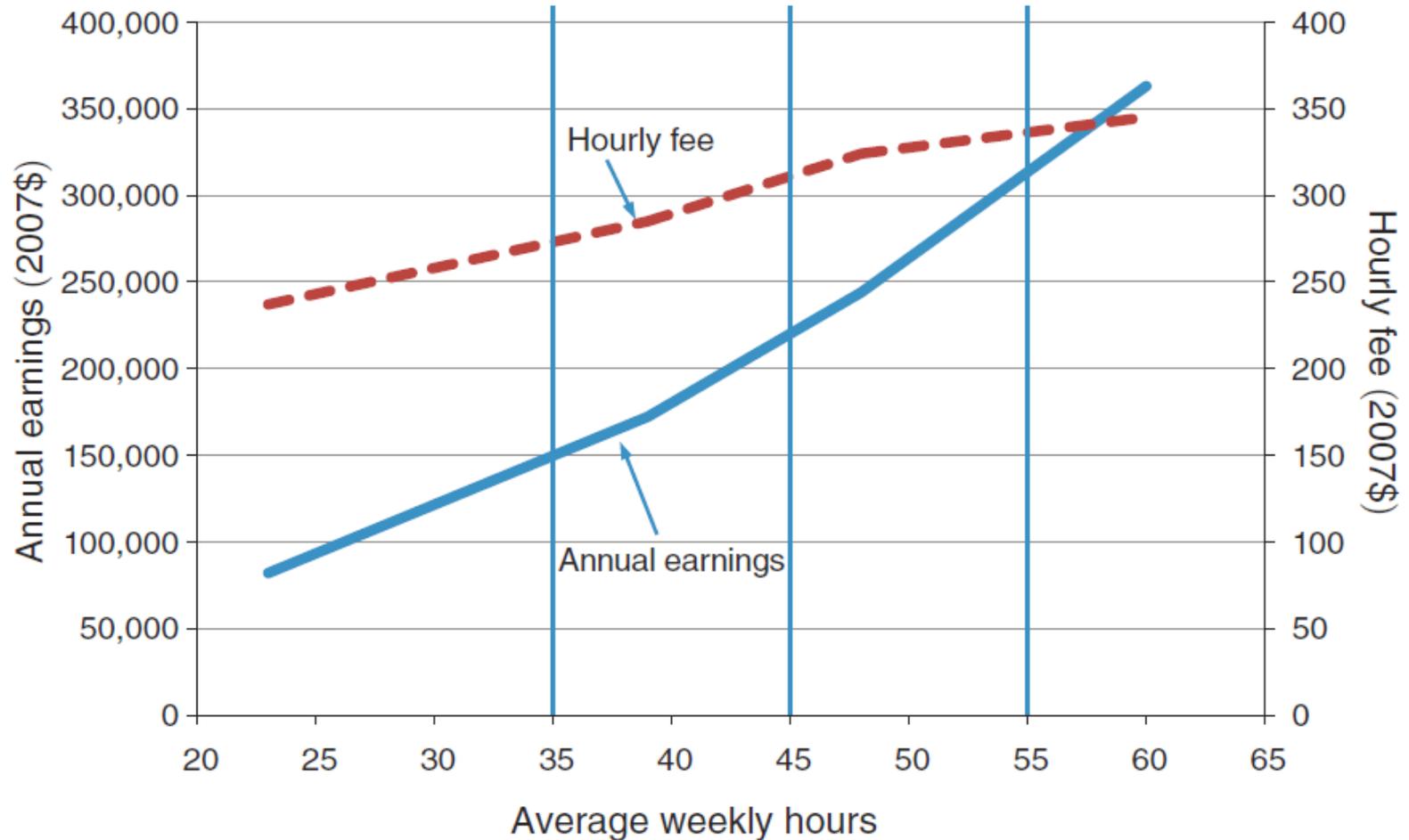


Simulated Proportions of women who have had a second child, ECHP 1994-2000, 13 countries
(Adserà 2011)

Time since first birth	Labor market status since first birth				
	Inactive	Full time private sector	Part time private sector	Full time public sector	Part time public sector
5 years	0.605	0.517	0.563	0.62	0.66

Gender Inequality in high end of labor Market: Nonlinear Wage profiles that penalize women most

Hours and earnings 15 years after Law School in US (Goldin 2004)



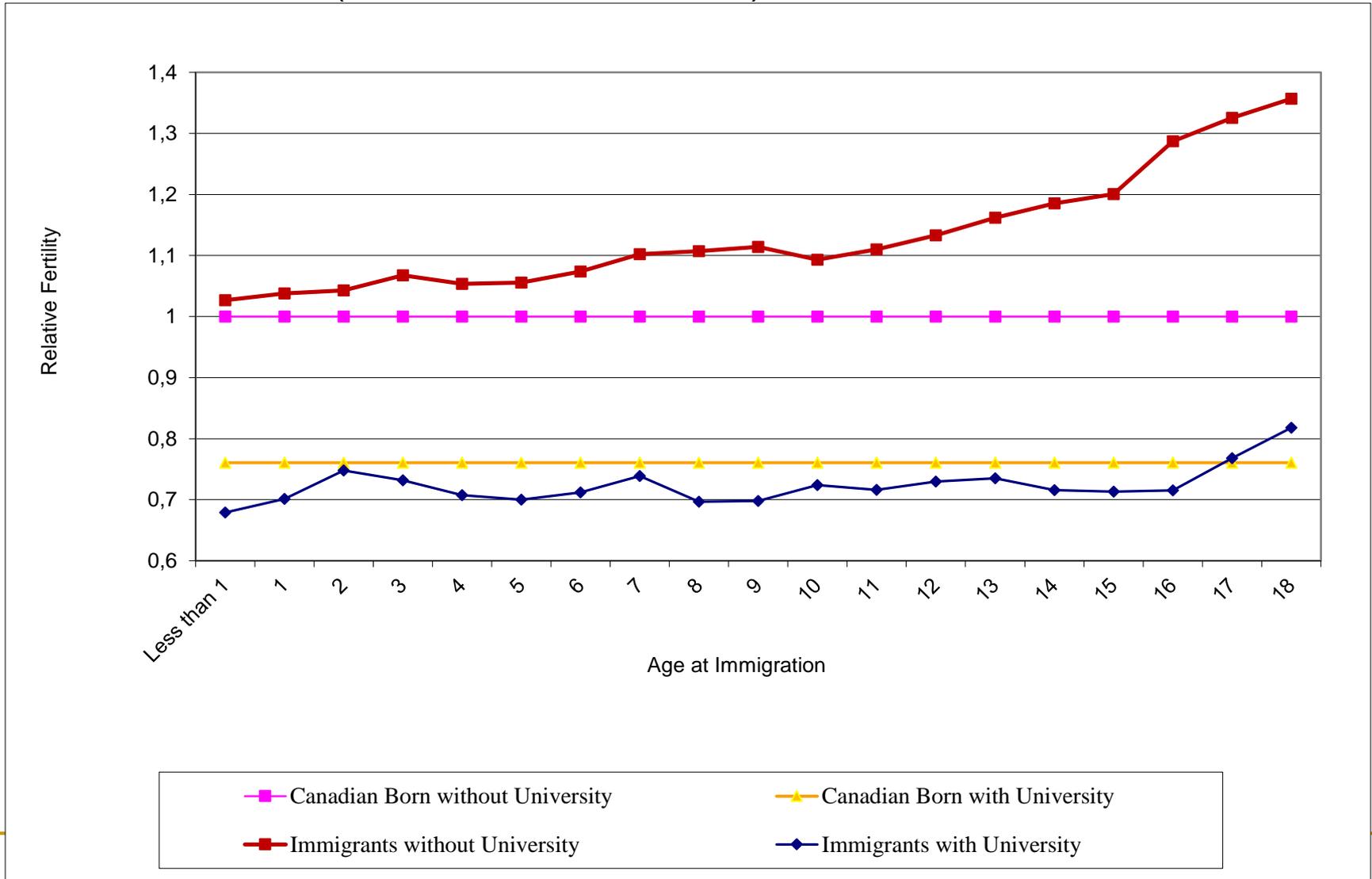
2) Cultural transmission -immigrants

- Large literature studying fertility patterns of migrants in OECD countries
 - Goldstein and Goldstein 1981, Anderson 2004; Milewski 2007, Parrado and Morgan 2008, Georgiadis and Manning 2011, Coleman and Dubuc 2010, Fernandez and Fogli 2009, Kulu 2005, 2006, Toulemon 2004, among many others
 - Great overview by Sobotka(2008) shows the **net effect of these migrants coming from high fertility countries is still relatively small** on the period total fertility of most reception countries, ranging between 0.05 and 0.10 increases of the TFR in absolute terms.
-

2) Cultural transmission -immigrants

- Migrant fertility **drop** more than natives' during recent crises
- Selection by **immigration policy** affects composition
- Convergence may be **key to socio-economic integration**; mothers are role models for kids.
- Some Convergence
 - for second generation in Canada (with heterogeneity across origins) (Adserà and Ferrer 2010);
 - for child migrants in Canada, UK and France (except those arriving as teens) (Adserà, Ferrer, Sigle-Rushton 2012);
 - at similar education levels in Canada (Adserà and Ferrer 2014)

Migrants in Canada: Incidence Rate Ratios (IRRs) from a Poisson regression **relative to Canadian born women with no university**. Canadian Census 1991, 1996, 2001, 2006 (Adserà and Ferrer 2014)



Relative Fertility by generational status in Canada in relation to third generation (Adserà and Ferrer 2010)

TABLE 5
Fertility Rate by Generational Status, 2001, 2006

		<i>RFR</i>	<i>Predicted # Children</i>
Third generation	Domestic born – Canadian parents	--	1.75
Second generation	Domestic born – immigrant parents	0.964**	1.63
2.5 generation	Domestic born – immigrant father	0.971**	1.65
	Domestic born – immigrant mother	0.962**	1.63
First generation	Immigrants – Canadian parents	1.063**	1.82
	Immigrants – immigrant parents	1.063**	1.78
	Immigrants – immigrant father	1.049**	1.74
	Immigrants – immigrant mother	1.111**	1.92
Observations			988,640

Second generation on average, lower (<1) fertility than natives. Large share of 2nd generation have European ancestry (1st generation, largely Asian). Role of compositional effect?. Still model controls for major demographic characteristics that should matter.

TABLE 6

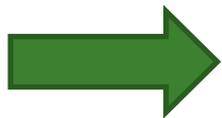
Fertility and Parental Place of Birth of Second Generation Canadians, 2001-06

Parental place of birth	<i>RFR (I)</i>	<i>Predicted # Children</i>	<i>RFR (II)</i>	<i>Predicted # Children</i>
	Father		Mother	
Canada	--	1.76	--	1.76
US	0.979	1.64	1.018	1.70
Caribe	0.940**	1.65	0.861***	1.51
Mexico	1.555***	2.69	1.387***	2.40
Central America	0.823	1.49	0.891	1.61
South America	0.926*	1.62	0.963	1.68
Northern Europe	0.949**	1.61	0.935**	1.58
Central Europe	1.101***	1.87	1.085***	1.84
Eastern Europe	0.965***	1.59	0.963***	1.58
UK / Ireland	0.941***	1.62	0.935***	1.61
Southern Europe	0.918***	1.62	0.927***	1.64
Middle East	1.094**	1.86	1.152***	1.97
China	0.683***	1.12	0.691***	1.13
North Eastern Asia	0.497***	0.79	0.549***	0.87
South East Asia	0.641***	1.09	0.674***	1.15
Southern Asia	0.663***	1.12	0.694***	1.17
North Africa	0.900*	1.45	0.942	1.52
Central Africa	0.780*	1.30	0.716	1.20
West Africa	1.030	1.75	0.947	1.61
Southern Africa	0.928	1.53	0.801***	1.33
Eastern Africa	0.550***	0.96	0.548***	0.96
Pacific	0.784***	1.34	0.760***	1.30

Observations

495,275

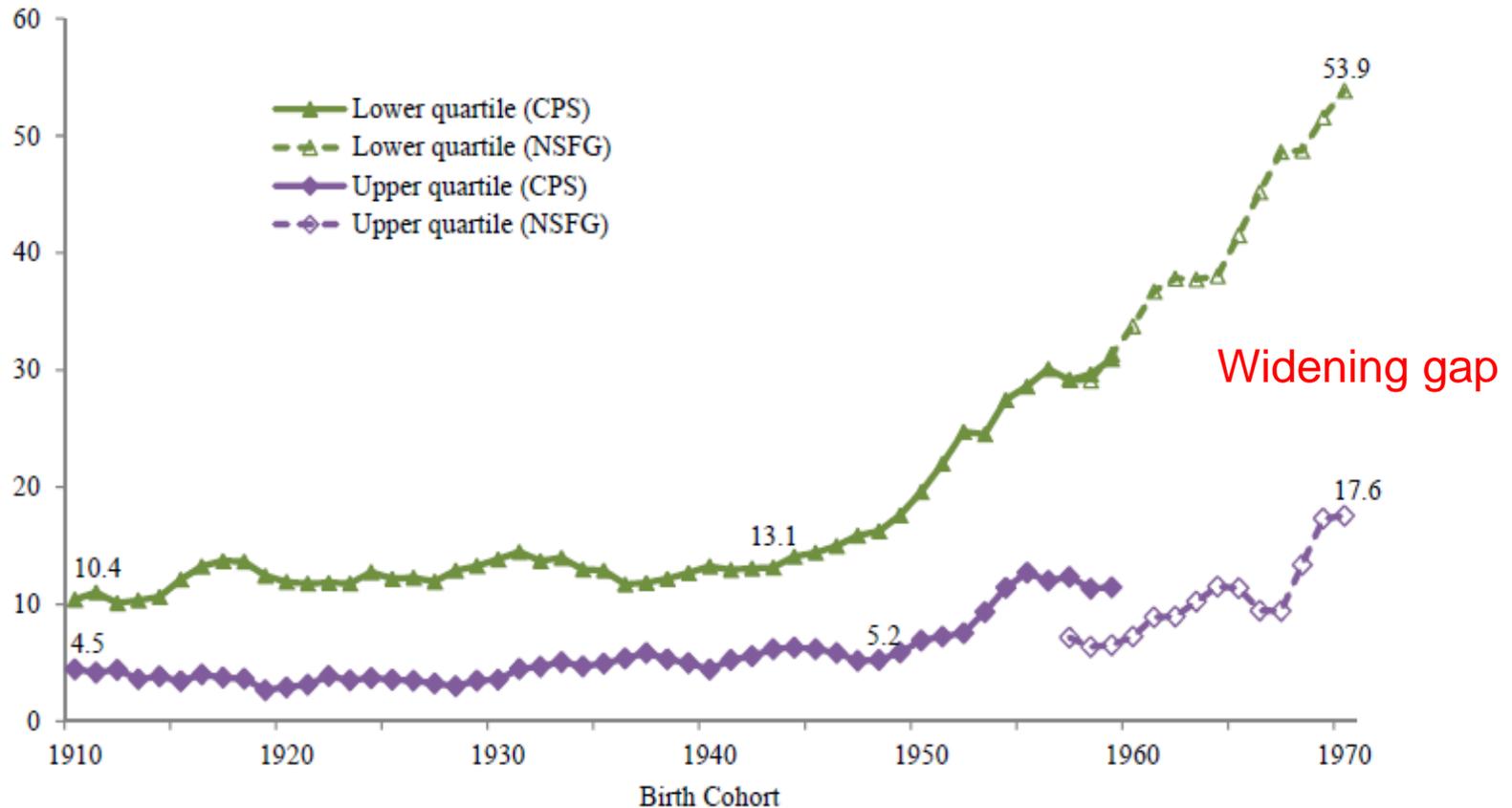
Differences by Parental origin



-

3) Unequal access to parental resources: Non marital first birth by education -US (Bailey, Guldi & Hershbein 2013)

Figure 14. Non-Marital First Childbirth, by Education Quantile and Birth Cohort



The figure plots the percentage of first births that are non-marital among women ages 36+, by birth cohort, for the June CPS (1910 through 1959 cohorts) and the same statistic for women in the NSFG (1957 through 1970 cohorts). See text for education group definitions. All computations use the recommended population weights. The June CPS series use 3-cohort moving averages and NSFG series are 5-cohort moving averages. Sources: 1979-1995 June CPS and 1995-2010 NSFG.

3) Unequal access to parental resources

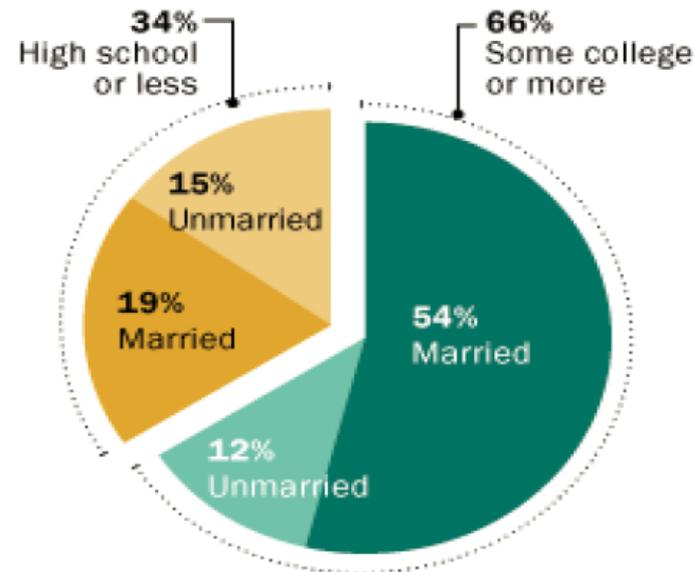
Diverging Destinies

McLanahan (2004, 2015),
Cherlin et al. (2014), Perelli-
Harris et al. (2010)

Low educated:

- More single/cohabit
- More divorce
- Younger moms
- Less time spent with kids
- Less employment
- Kids show less social trust

Mothers of Infants by Educational Attainment and Marital Status, 2011



Note: "Mothers of infants" are women ages 15 to 44 with their own child younger than age 1 in their household.

Source: Pew Research Center analysis of 2011 American Community Survey (1% IPUMS)

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Inequality: Implications for the future?

- Intentions are still there...Limits to rely on ART

1) Unequal Labor Markets:

- Great recession: Is convergence only temporary? More difficult for low/mid educated men (and women) to sustain “good” jobs. More people returning (or staying) in parental home.
 - Loss of “jobs in the middle” (also affects some university graduates).
 - Institutions to level the playing field for women. Women higher life expectancy and fewer kids, more time to reap return to education!!....but still large gender gaps.
-

Inequality: Implications for the future?

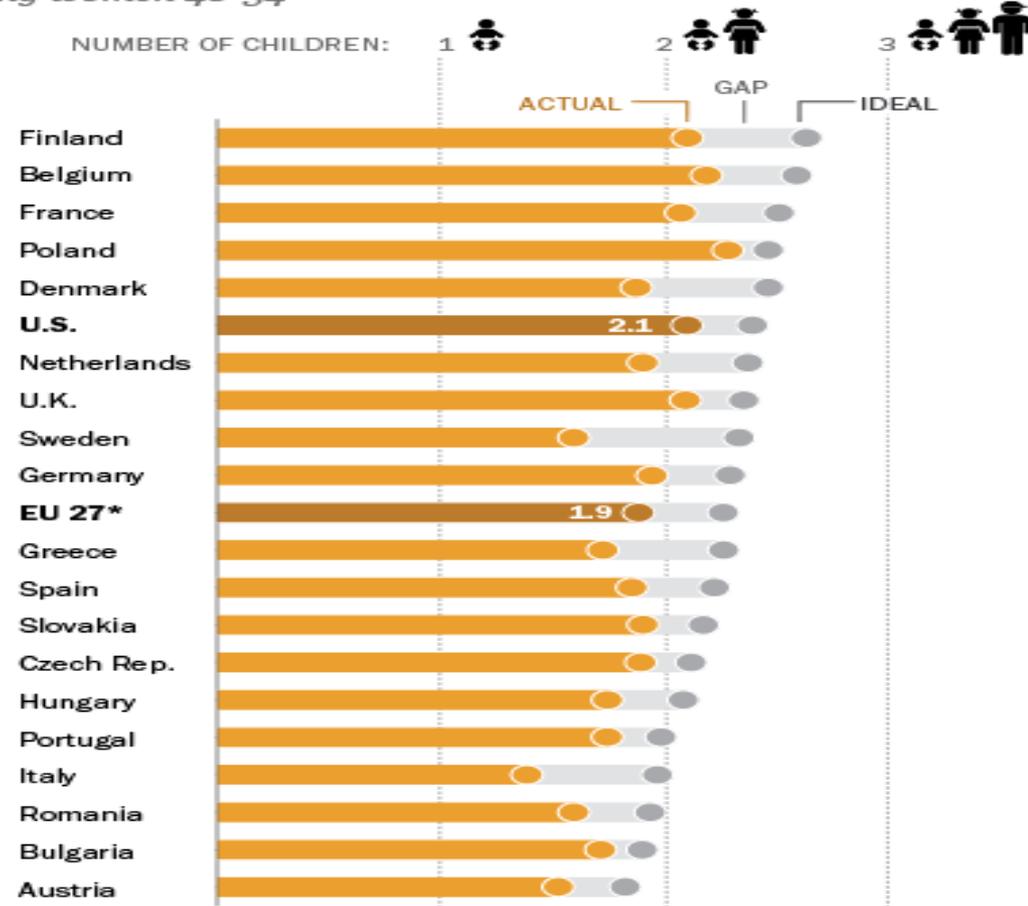
2) **Cultural transmission –immigrants**: limited role in increasing TFR; migration policy key in selection; female labor force participation for adaptation.

3) **Unequal access to parental resources - *Diverging destinies***:

- More consequential if the level of intergenerational mobility is low: policy to moderate impact for next generations (fertility and educational attainment)
 - Benefits based on individual rather than family eligibility to encourage work-family and improve kids chances (McLanahan 2004, 2015).
-

European, U.S. Women Ideally Want More Children Than They Actually Have

Among women 40-54



*Mean for all 27 nations who were members of the European Union in 2011.

Only those countries with a population over 5 million are shown. Actual fertility in Europe based on biological children only. European ideal fertility based on responses to: "And for you personally, what would be the ideal number of children you would like to have or would have liked to have had?" U.S. ideal fertility based on responses to: "What do you think is the ideal number of children for a family to have?" Respondents providing non-numerical answers are excluded from analysis. Sources: European data from 2011 Eurobarometer, U.S. data from 2006 and 2008 General Social Survey

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Gap between actual and desired from 2011 Eurobarometer data and 2006-2008 US General social survey (Pew Research 2014)

The end!

Additional slides

Experience and Hours of Work

- “Fertility stands not just for childbirth but more importantly for *childbearing*” (Kravdal and Rindfuss 2008).
 - Labor market experience is the single most important factor explaining differences between men and women’s wages (within the same occ.)
 - **Women with children** more often work **part time** and are away from the labor market in periods
 - Women are **less flexible** on the labor market
 - Women **self-select into family-friendly jobs**
 - Women are **less likely to be promoted**
-

SPAIN: Simulated Proportion of Second-time mothers by Varying Labor Market Conditions since Their First Birth (Adsera 2011)

Share of women with a Second Birth 8 years after 1st

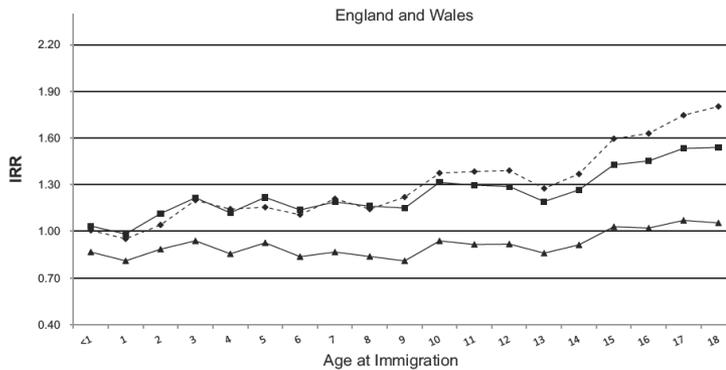
Provincial Unemployment Rate (Quarter)

Education	5%		10%		20%	
	Low Sec	College	Low Sec	College	Low Sec	College
All	69.6	74.0	67.6	74.0	63.5	74.1
Born 1950+	73.4	80.3	70.7	79.0	65.2	76.4

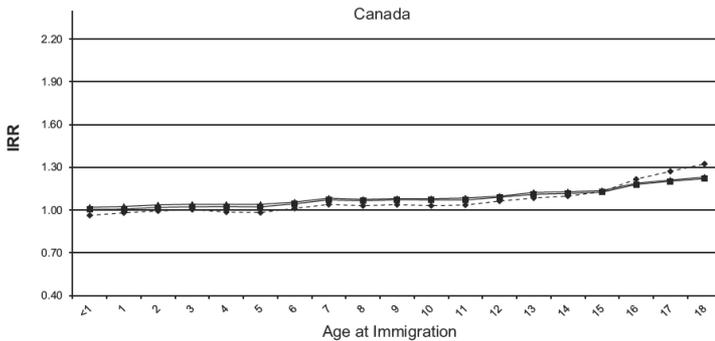
Share Temporary Employment

Education	5%		15%		30%	
	Low Sec	College	Low Sec	College	Low Sec	College
All	70.4	75.3	66.8	74.0	61.3	72.0
Born 1950+	73.7	80.7	69.7	78.5	63.6	75.0

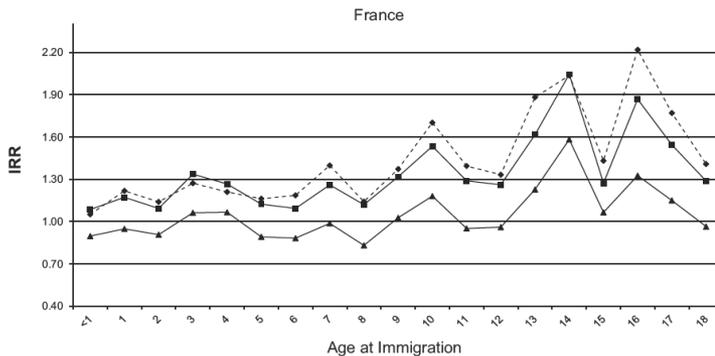
Note: Age at first birth is set at the mean of each education group, the birth cohort is set for those born 1960-67 and all other variables set at the mean. The share of temporary employment is set at the mean when provincial unemployment is allowed to vary in the first two rows and vice versa for the last two rows.



◆ Basic (foreign relative to native-born)
 ■ Basic + education and marital status (foreign relative to native-born)
 ▲ Basic + education and marital status + place of birth (North American-born relative to native-born)



◆ Basic (foreign relative to native-born)
 ■ Basic + education and marital status (foreign relative to native-born)
 ▲ Basic + education and marital status + place of birth (U.S.-born relative to native-born)



Comparing graphs in the same axis:

The differences between migrants and natives are **smaller in Canada than in France of England and Wales.**

Composition? Immigrants more college educated than natives
 Selection?

Immigration Policy (Canada point system)

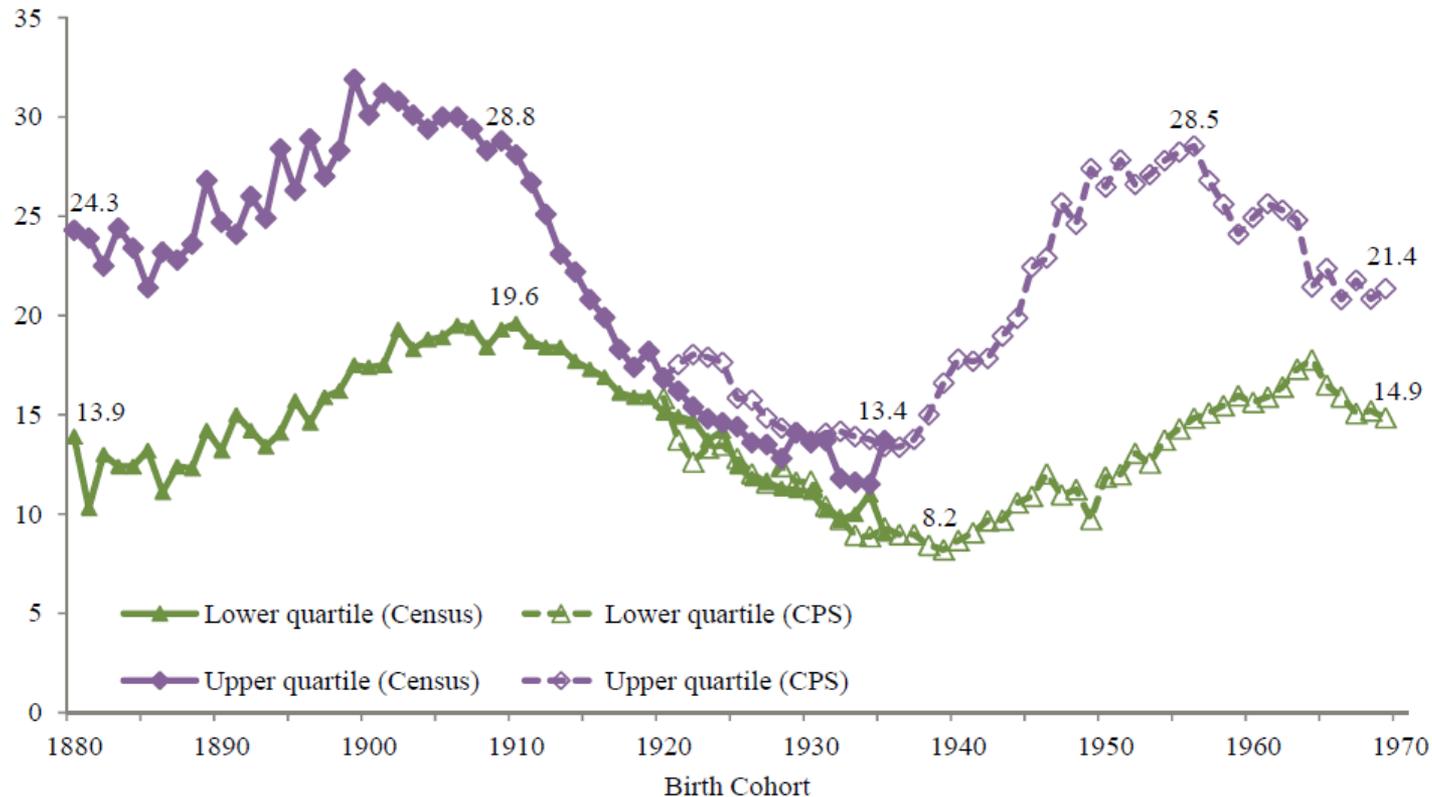
■ **Canada:** 20% sample of the Canadian Census of Population for the years 1991, 1996, 2001 and 2006.

■ **France:** Enquete Trajectoires et Origines (TEO) 2008

■ **England & Wales:** UK Census of Population 1991, 2001.

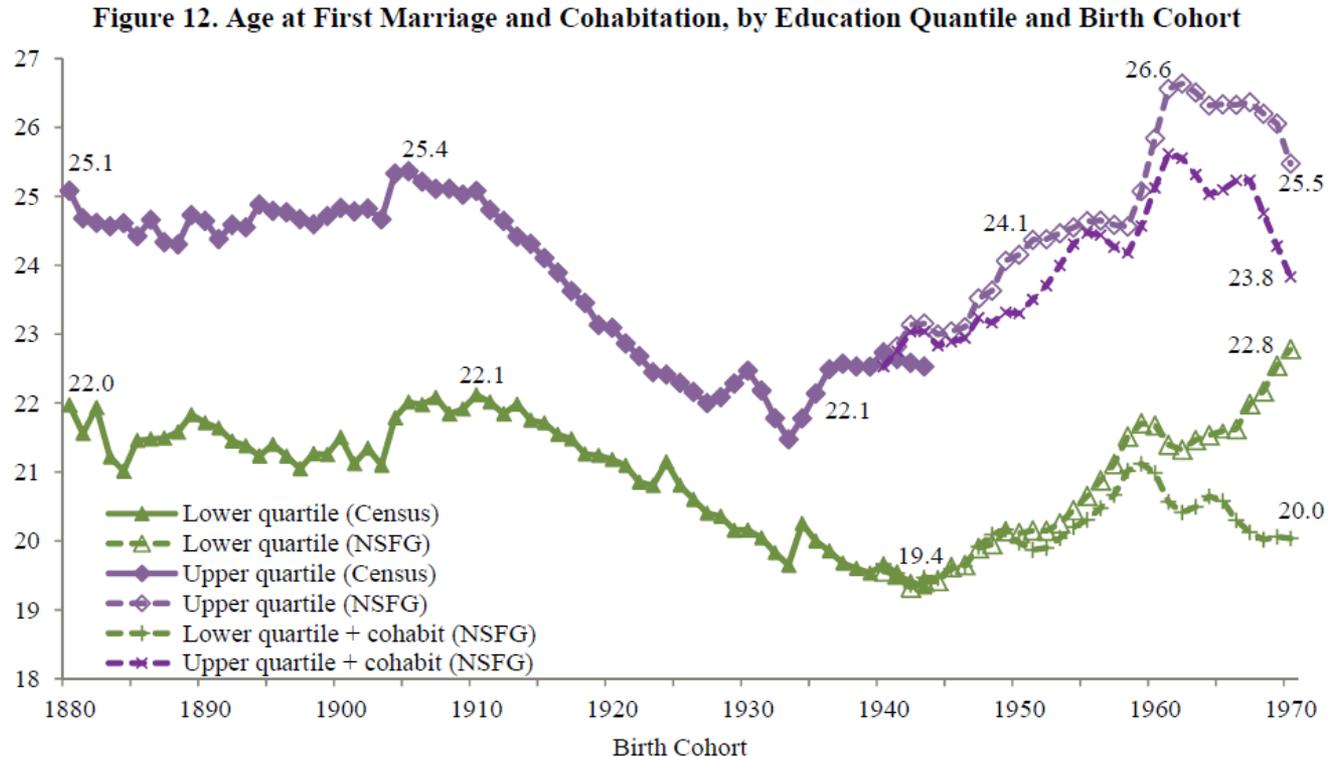
USA: Childlessness by education

Figure 10. Childlessness, by Education Quantile and Birth Cohort



The figure plots the percentage of women ages 41+ who have not had a live birth, by birth cohort, for the Census (1880 through 1935 cohorts) and the same statistic for women in the June CPS (1920 through 1969 cohorts). See notes and sources for figure 12.

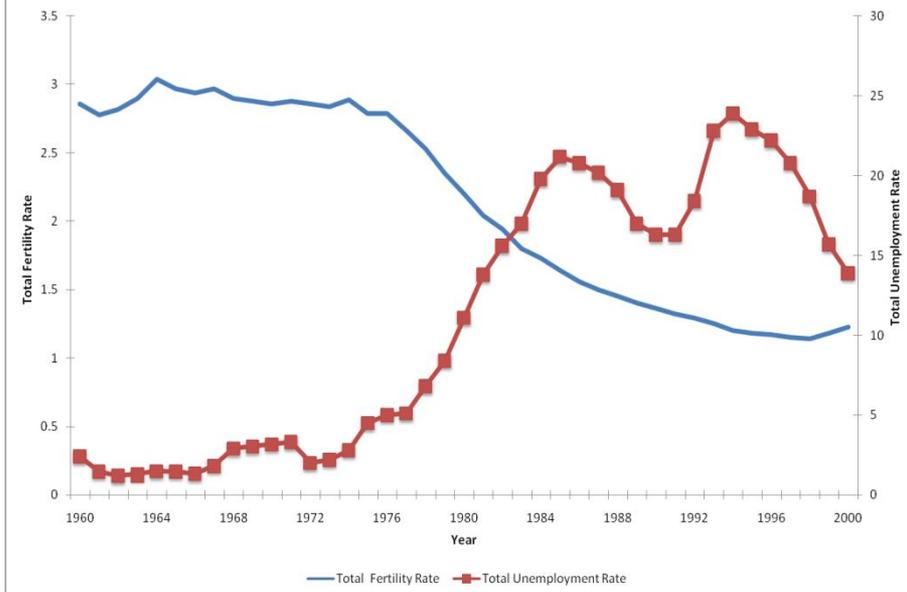
USA: Age at first marriage/cohabitation



The figure plots age at first marriage among ever-married women ages 36+ by birth cohort using the Census (1880 through 1943 cohorts) and the NSFG (1940 through 1970 cohorts). For the NSFG cohorts, there are also series plotted for the younger of age at first marriage or age at first cohabitation (conditional on one of these events occurring by age 35). See text for education group definitions. All computations use the recommended population weights and the NSFG series are 5-cohort moving averages. Sources: 1940-1980 IPTIMS (Rueoes *et al.* 2012) and 1982-2010 NSFG

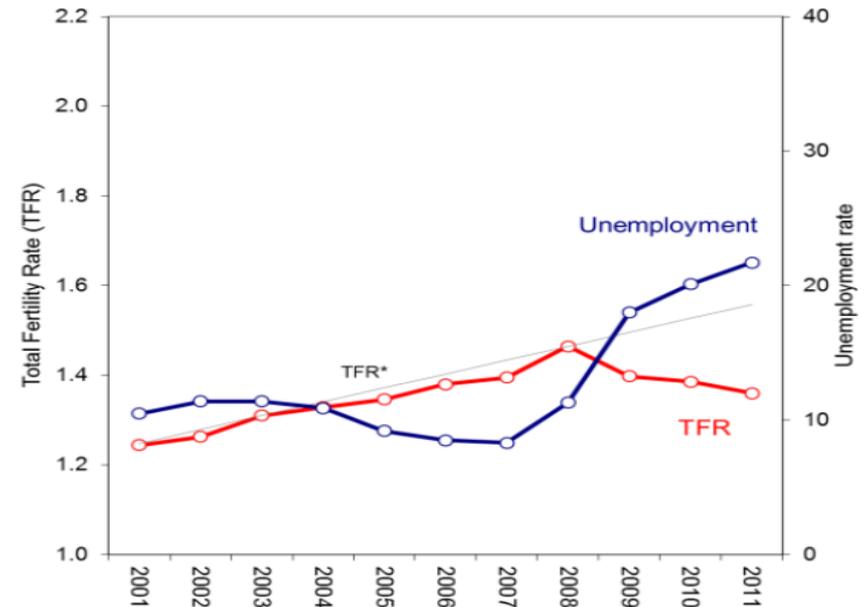
Here we go again: The Spanish rollercoaster and the last “Great Recession”

Fertility and Unemployment in Spain, 1960-2000



Adsera 2006

Spain



Adsera 2006

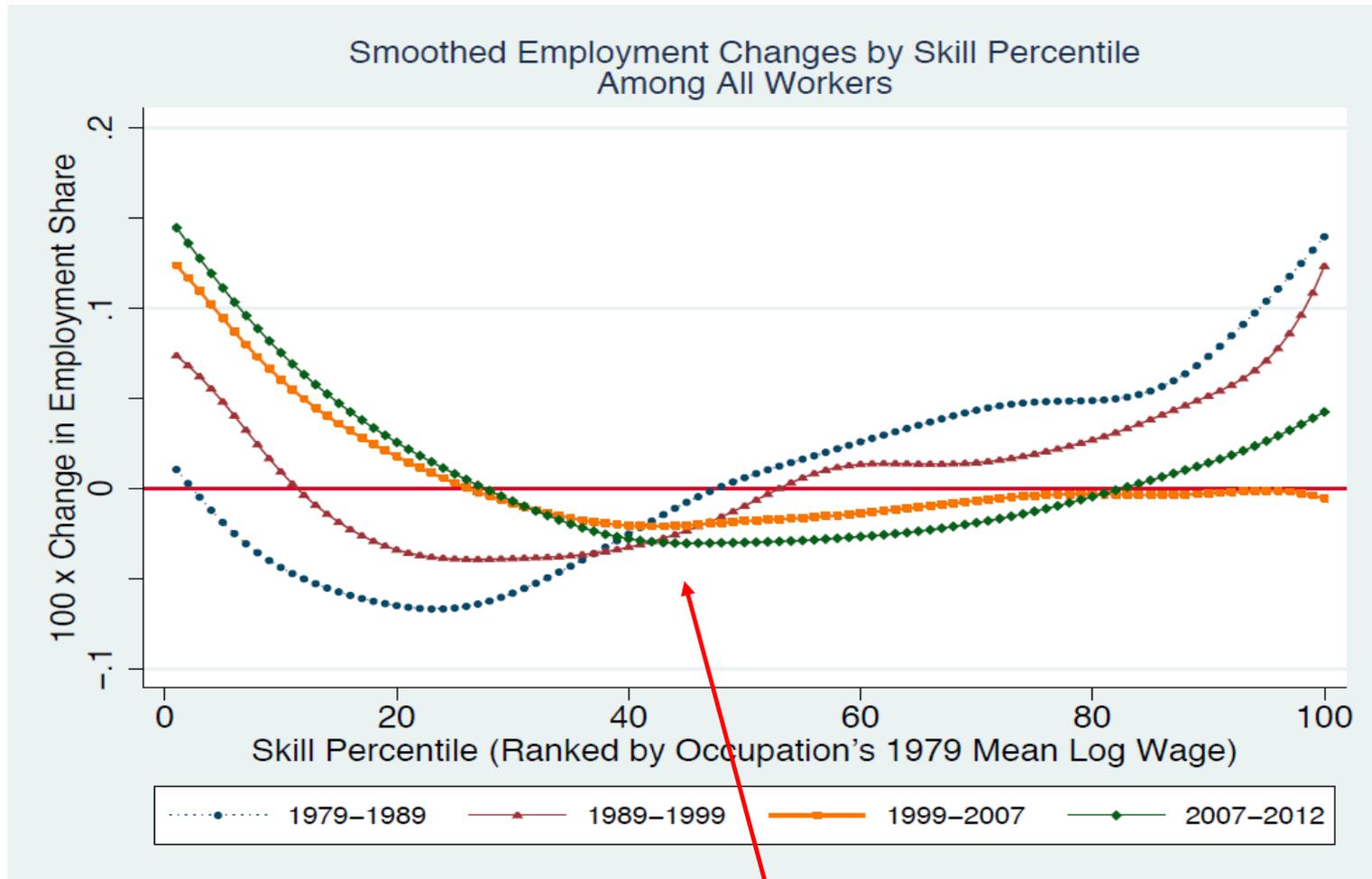
Simulated gap: (current ideal - actual children born)

Data: 1999 Spanish Fertility Survey

Provincial Unemployment rate at wife's 24 th birthday	Women's current labor market status			
	Inactive	Private Sector Permanent Contract	Public Sector Permanent Contract	Private Temporary Contract
2%	-0.046	0.088	-0.028	0.186
6%	-0.028	0.107	-0.009	0.205
10%	-0.009	0.125	0.009	0.223
14%	0.009	0.144	0.028	0.242
18%	0.028	0.162	0.047	0.260
22%	0.046	0.181	0.065	0.279
26%	0.065	0.200	0.084	0.297

Simulations from estimates in Adsera (REH 2006) for individuals living in a small city and married at 23.5 years of age. All other variables are set at the benchmark.

Figure 7. Smoothed Employment Changes by Occupational Skill Percentile, 1979 – 2012



Middle income jobs disappearing and lower wage growth/↓

Relative risks of having a cohabiting birth, educational gradient

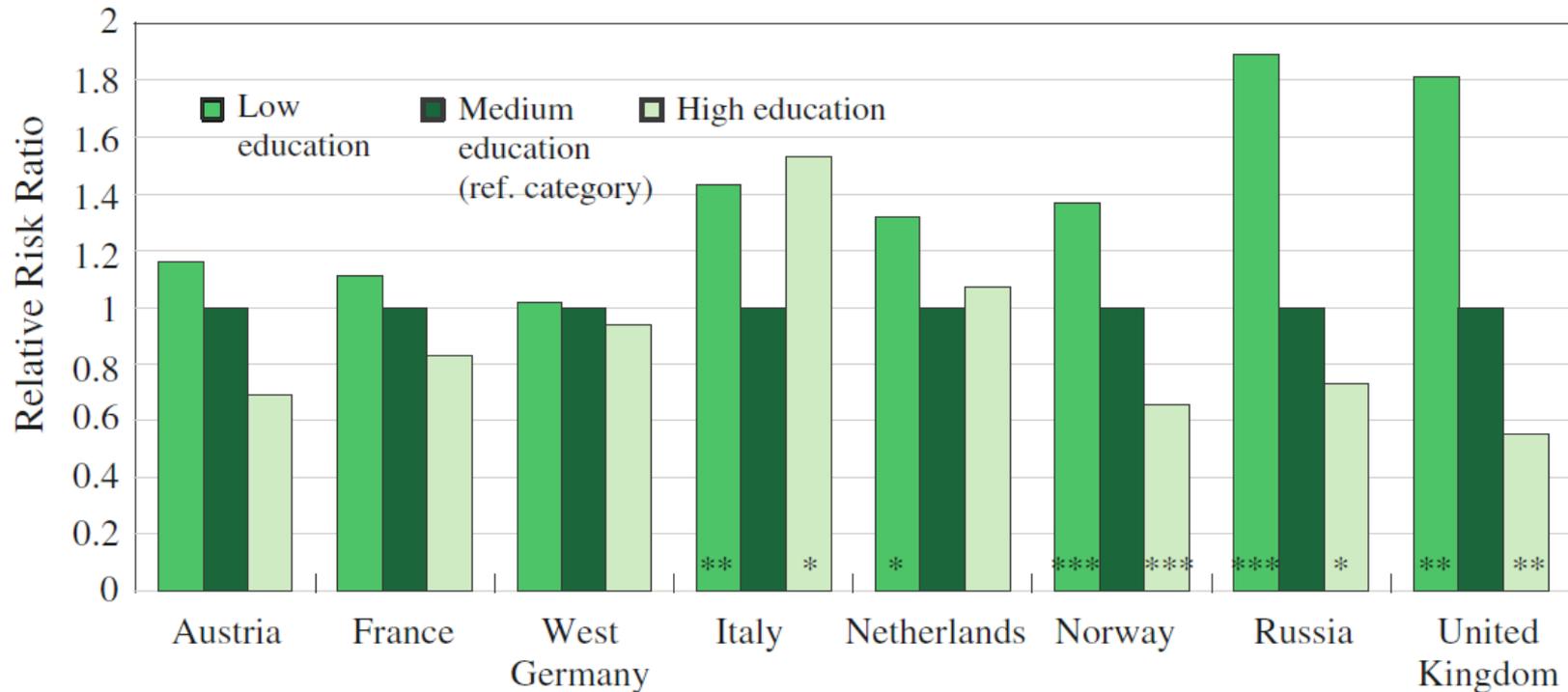


Fig. 1.6 Relative risk ratios for identifying the educational gradient of first births to cohabiting women relative to married women in eight European countries, 1970 to Latest Date Available. *Single asterisk (*)* $p < 0.05$; *double asterisk (**)* $p < 0.01$; *triple asterisk (***)* $p < 0.001$. Source Perelli-Harris et al. (2010)

Cited in *Diverging Destinies revisited*: McLanahan and Jacobsen (2015)

Kalil, Ryan and Corey (Maternal education and developmental Gradient in time with children)

