The Changing Educational Gradient of Union Dissolution across Europe: Is it Due to Timing and Probability Effects?

Extended abstract submitted at the 2020 European Population Conference

24-27 June 2020, Padua, Italy

Raffaele Guetto[i], raffaele.guetto@unifi.it

Anna Matysiak[ii], Anna.Matysiak@oeaw.ac.at

Daniele Vignoli[i], daniele.vignoli@unifi.it

[i] University of Florence, Italy

[ii] Vienna Institute of Demography, Austria

Short abstract (149 words)

The idea that the educational gradient of divorce turns from positive to negative as societal barriers to divorce reduce is widely accepted in the literature. The theoretical arguments justifying such reversal seem more related to the effect of education on the *probability* of experiencing divorce, rather than its *timing*. However, empirical studies have tested the hypothesis mostly through event history models, which make it difficult to disentangle timing and probability effects. We ask then whether there is an independent effect of education on the timing of union dissolution, and how it changes over time and space. We hypothesize that while for older cohorts probability effects may be dominant, for younger cohorts both timing and probability effects of education might be at work, potentially with different sign and magnitude. Hypotheses are tested applying different methodologies to disentangle timing and probability effects of education on union dissolution across several European countries.

Introduction

The hypothesis, originally favored by Goode (1962, 1970, 1993), of a reversal over time of the educational gradient of divorce – from positive to negative – has been widely confirmed by cross-country empirical studies (Härkönen and Dronkers 2006; Matysiak, Styrc, and Vignoli 2014).

The main argument in support of such hypothesis is that when the legal, social, and economic barriers to divorce are high, only highly-educated women have the necessary cultural and economic resources to face such barriers. As divorce spreads and the legal, social and economic barriers tend to fade, it becomes more accessible also for lesser educated women. It has been shown that the "de-

institutionalization" of marriage and the diffusion of unconventional family practices, as well as the increasing female labor market participation across all socioeconomic strata, played a crucial role for breaking down the societal barriers to divorce (Härkönen and Dronkers 2006; Matysiak, Styrc, and Vignoli 2014).

As divorce diffuses and gets democratized, unions involving highly-educated partners tend to become even more stable than unions made by lesser educated partners. Highly-educated individuals are indeed more likely to form relationships characterized by higher quality, as they might be more attractive in the marriage market, as well as have better social, communication and cognitive skills that may help in solving marital conflicts (Amato 1996; Hoem 1997; Jalovaara 2003). Highly-educated couples report indeed higher marital satisfaction, which is an increasingly relevant predictor of union dissolution. Moreover, highly-educated women may also experience less marital strain as they enjoy higher standards of living, thus having more to lose in case of divorce. For instance, home ownership has been found to be the most important mediator of the negative effect of education on divorce (Boertien and Härkönen 2018).

The above mentioned theoretical arguments justifying the reversal of the relation between education and divorce seem more related to the effect on education on the *probability* of ever experiencing divorce, rather than its *timing*. However, empirical studies have tested the hypothesis mostly through event history models (Matysiak, Styrc, and Vignoli 2014), which make it difficult to disentangle the effects of individuals' characteristics on the probability from those on the timing of the event (Bernardi 2001).

Research questions

The contribution of this work is to theoretically address and empirically test whether and how education may affect both the probability and the timing of divorce, across different countries and in different periods. Theoretically, we ask whether the mechanisms considered to be responsible for the educational gradient of divorce, and its reversal over time, are equally relevant, from a theoretical point of view, for the probability and the timing of divorce: are highly-educated women both *more likely* and *faster* to divorce when societal barriers to do so are high? Do they become both *less likely* and *slower* to divorce when such barriers fade away?

The educational effects on probability and *timing* of *divorce* may well go in opposite directions, especially when divorce becomes more common and widely accepted by the society. In this setting, highly-educated women are indeed deemed to become less likely to divorce because they tend to form "better unions" and have more to lose; but, at the same time, when confronted with strong relational

problems and conflictual partnerships, they may still be faster to divorce than the low-educated ones because of their higher economic (and cultural) independence.

Empirically, we then ask: is there an independent effect of education on the timing of divorce? What is its sign and magnitude? How does it change over time and space with the diffusion of divorce and the reversal of its educational gradient?

Data and methods

We use data from the Harmonized Histories dataset (Perelli-Harris, Kreyenfeld, and Kubisch 2010), containing information on union histories for 18 European countries. We complement these data with updated surveys for Italy and the U.K. We select women who have ever been in a stable union and analyse their risk of first union dissolution, considering both cohabitations and marriages. If not experiencing first union dissolution, women leave the risk set up to a) the month of death of the partner, b) the month of the interview, or c) 20 years after the start of the union, whatever comes first.

The main independent variables are women's education, operationalized in three categories (ISCED 0-2, 3-4, 5-6) and the year of union formation, recoded in cohorts. Mother's educational level (recoded as for the respondent) and the experience of parental divorce before the respondent was 15 are included as control variables. Information concerning the age at first union and type of union (marriage or cohabitation) are included in a second step, as they are partly influenced by education, thus not being "control variables" in strict sense.

Two types of continuous-time event history models will be implemented, which provide two different ways to disentangle whether the effect of education on first union dissolution is a timing or a probability effect. First, piece-wise constant exponential models (P-WCEM) augmented with a test of the proportionality of the education effects are implemented, together with an analysis of survival functions at the end of the observational window. In this way, the problem is reformulated in terms of proportionality/non proportionality of the educational effects (Bernardi 2001).

In addition, cure models are implemented (Andersson and Lambert 2012; Bremhorst, Kreyenfeld, and Lambert 2016). These models take explicit account of the existence of two separate populations, the "cured" (i.e. women never experiencing divorce in the observational window) and the "uncured" (those who did experience divorce), and allow to predict the "cured" proportion and the survival functions for the "uncured" by women's level of educational attainment.

In both modelling strategies, separate models by country and cohort of union formation will be implemented to consider differences across time and space in the effects of education.

Preliminary results

Table 1 shows results from the same P-WCEM implemented separating Western European countries (Belgium, France, Germany, Norway, Sweden, and the UK), the forerunners of the Second Demographic Transition, from the rest of Eastern and Southern European countries. Results show that the positive educational gradient found among the older union cohorts in both European areas turns non-significant in Western Europe, whereas a slight negative gradient emerges in the rest of Europe. A stronger negative educational gradient for the younger cohort of unions is found in both European areas once controlling for mother's educational level (not shown here). Including in the models interactions between country and education, as well as country and union cohorts, does not alter the results (not shown here).

Table 1 Piece-wise constant exponential models for the analysis of first union dissolution

	Western Europe		**Eastern and Southern EU**	
	Coeff.	Sig.	Coeff.	Sig.
Duration (*ref.: 1 year)*				
1-3 years	0.476	***	0.519	***
3-8 years	0.101	*	0.416	***
8+ years	-0.231	***	0.144	**
Education (*ref. ISCED 1-2*)				
ISCED 3-4	0.222	***	0.449	***
ISCED 5-6	0.399	***	0.608	***
Cohort of union formation (*ref. 1950-1969*)				
1970-1980	0.864	***	0.690	***
1981-1990	1.438	***	1.230	***
Education*Cohort of union formation				
ISCED 3-4*70-80	-0.233	**	-0.302	***
ISCED 3-4*81-90	-0.290	***	-0.493	***
ISCED 5-6*70-80	-0.308	***	-0.417	***
ISCED 5-6*81-90	-0.398	***	-0.715	***
Constant	-7.401	***	-8.800	***
	N. subjects: 17,580 N. of events: 5,410		N. subjects: 43,102 N. of events: 6,824	
*** p≤0.01, ** p≤0.05, * p≤0.10				

Was the positive educational gradient of union dissolution found for the older cohorts a matter of timing or probability effects? Table 2 shows the same model of Table 1, but selecting only unions formed before 1970. Model is augmented with interactions between the time intervals in which the observational window has been split and women's education (models implemented by European area, not shown, produced very similar results). The timing barely makes any difference for the older cohorts: non-significant coefficients associated to time intervals for low-educated women suggests

that their baseline hazard is essentially flat. That is, among low-educated women an exponential model assuming a constant union dissolution risk would adequately fit the data. Shifting to middle- and high-educated women, results suggest that the proportionality assumption is fully respected (apart from the 1st year of marriage in which very few dissolutions occur for this cohort): the higher risks of middle- and high-educated women of experiencing union dissolution is observed, with the same magnitude, at each point of the observational window.

Table 2 Piece-wise constant exponential models for the analysis of first union dissolution

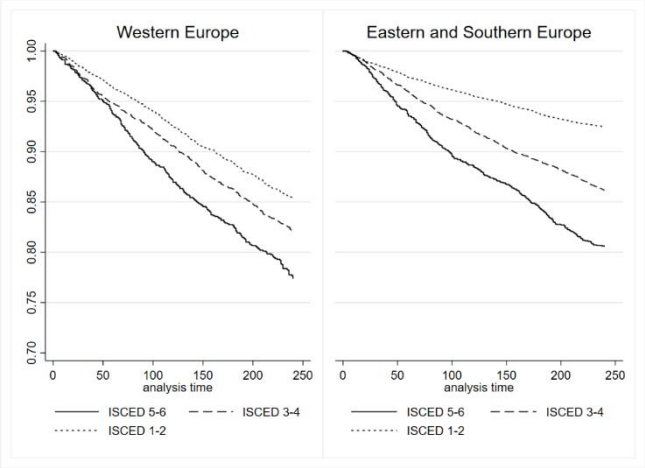
Only unions formed between 1950-1969

	Coeff.	Sig.
Duration (*ref.: 1 year)*		
1-3 years	0.066	
3-8 years	-0.052	
8+ years	-0.184	
Education (*ref. ISCED 1-2*)		
ISCED 3-4	-0.072	
ISCED 5-6	-0.165	
Education*Duration		
ISCED 3-4*1-3 years	0.419	**
ISCED 3-4*3-8 years	0.434	*
ISCED 3-4*8+ years	0.424	***
ISCED 5-6*1-3 years	0.699	**
ISCED 5-6*3-8 years	0.786	**
ISCED 5-6*8+ years	0.615	**
Constant	-7.365	***
	N. subjects: 23,461 N. of events: 2,934	

*** p≤0.01, ** p≤0.05, * p≤0.10

The implications of the results in terms of survival functions is that the effect of education can be expressed in terms of higher or lower probability of union dissolution. Figure 1 shows that in Western Europe approximately 77% of high-educated women in the older union cohorts are still observed in first union at the end of the observational window, against 85% of low-educated women. In the rest of Europe, among low-educated women who formed their first union before 1970 the probability of experiencing union dissolution is extremely low: 92% are still observed in first union after 20 years of observation. The same figure drops to approximately 80% among high-educated women.

Figure 1 Survival functions for first union dissolution, by European area and education
Only unions formed between 1950-1969



Future developments

Results show that education only affected the probability of union dissolution, rather than its timing, when barriers to divorce were high and divorce was a rare even. This finding has important interpretative implications. Education did not moderate women's reactions to potentially stressful events that happen in specific moments of union life, such as childbirths, own or partner's job loss, and so forth. Couples involving a high-educated women were *persistently* at higher risk of dissolution throughout union duration. That is, among the older union cohorts , some of them were "susceptible" to dissolution whereas others were not, and highly-educated women were largely overrepresented in the first group.

For this reason, it will be interesting to adopt the methodological framework of cure models that take explicit account of the existence of two separate populations, the "cured" (i.e. women never experiencing divorce) and the "uncured" (those who did experience divorce), and allow to predict the cured proportion and the survival functions for the uncured. This is the more relevant when focusing on younger union cohorts, among which union dissolution represents a less selective behavior, and for which we hypothesized that both timing and probability effects of education might be at work, potentially with different sign and magnitude.

Bibliographical references (partial)

Amato, P.R. (1996). Explaining the Intergenerational Transmission of Divorce. Journal of Marriage and Family, 58(3), 628-640.

Bernardi, F. (2001). Is it a Timing or a Probability Effect? Four Simulations and an Application of Transition Rate Models to the Analysis of Unemployment Exit. Quality & Quantity, 35, 231-252.

Boertien, D., and Härkönen, J. (2018). Why does women's education stabilize marriages? The role of marital attraction and barriers to divorce. Demographic Research, 38(41), 1241-1276.

Bremhorst, V., Kreyenfeld, M., and Lambert, P. (2016). Fertility progression in Germany: An analysis using flexible nonparametric cure survival models. Demographic Research, 35(18), 505-534.

Goode, W.J. (1962). Marital Satisfaction and Instability. A Cross-Cultural Class Analysis of Divorce Rates. In Bendix, R. and Lipset, S. M. (Eds), Class, Status, and Power. Social Stratification in Comparative Perspective. New York: The Free Press, pp. 377-387.

Goode, W.J. (1970). World Revolution and Family Patterns. New York: The Free Press.

Härkönen, J., and Dronkers, J. (2006). Stability and Change in the Educational Gradient of Divorce. A Comparison of Seventeen Countries. European Sociological Review, 22(5), 501-517.

Matysiak, A., Styrc, M., and Vignoli, D. (2014). The educational gradient in marital disruption: A meta-analysis of European research findings. Population Studies, 68(2), 197-215.

Perelli-Harris, B., Kreyenfeld, M., and Kubisch, K. (2010). Harmonized Histories Manual for the Preparation of Comparative Fertility and Union Histories. MPIDR WORKING PAPER WP 2010-011 FEBRUARY 2010 (REVISED FEBRUARY 2012).