Does the Effect of Parental Breakup on Children's Education Depend on the Divorce Rate?

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Abstract

This paper explores variations in the negative effect of parental breakup on children's chances to obtain a tertiary education, across contexts (countries and cohorts). We use data from the first wave of the Generations and Gender Survey from 13 countries and four birth cohorts, complemented by selected macro-level indicators (divorce rate and educational expansion). Fixed-effect logistic regressions show that the negative effect of experiencing parental separation is stronger in recent birth cohorts, which experienced higher parental divorce rates. Random-intercept logistic regression models confirm that the negative effect of parental breakup is significantly stronger when divorce is more common. The explanation, we argue, rests on declining level of parental conflict in splitting families: as divorce spreads in society, even couples with less conflict separate. A child from a dissolving low-conflict family is strongly negatively affected by loss of the family, whereas a child from a high-conflict family is rather relieved from a dysfunctional parental relationship and the positive effects of breakup may outweigh the negative ones. With increasing divorce rates and the changing composition of the population of splitting families, the share of low-conflict dissolving families increases and hence the average negative effect of breakup becomes more negative.

Key words: Divorce, Divorce rate, Family structure, Educational attainment

1 Introduction

Sociological and demographic investigations have shown repeatedly that parental divorce has a multitude of negative effects on the offspring. Children of divorced parents, in comparison to children from non-divorced families, have lower scores on various dimensions of well-being (Amato and Keith 1991b), attain less education (Evans et al. 2001; Fischer 2007; Fronstin et al. 2001; Keith and Finlay 1988; Liu 2007), and work in occupations of lower prestige and earnings (Amato and Keith 1991a; Fischer 2007; although this last finding may not hold for both genders, see Kiernan 1997). Their future family formation is also impacted as the children of divorce are more likely to cohabit before marriage, enter marriage at younger ages, and experience higher risks of subsequent marital dissolution (Amato 1996, 2003; Biblarz and Raftery 1999; Diekmann and Engelhart 1999; Glenn and Kramer 1987; Keith and Finlay 1988; Li and Wu 2008; Wolfinger 1999).

While the negative consequences of parental divorce on children's life chances are well documented, less is known about long-term trends and cross-country differences in the strength of this effect. In this paper, we develop hypotheses on the change in the size of the negative effect of parental breakup over successive cohorts and generalize them to differences across countries by linking variations in the association between parental breakup and offspring's college graduation to the prevailing divorce rate. We test these hypotheses using both fixed-effect and random-effect logistic regression models applied to data from 13 countries and four birth cohorts (i.e. a total of 52 macro-level contexts) from the surveys organized under the Generations and Gender Programme.

We find that the negative effect of parental separation is stronger when divorce is more common. We attribute this finding to the declining selection into divorce on the intensity of parental conflict: as divorce spreads, even couples with less conflict separate. The dissolution of a high-conflict family may be a relief for the child. The breakup of a low-conflict family, on the other hand, is more likely to harm the child. As divorce becomes more common, more and more low-conflict families split and the negative effects are encountered more frequently in the population. Then the negative consequences outweigh the positive ones and the overall negative effect becomes stronger.

2 Socioeconomic Disadvantage of Children of Divorce

Researchers have offered numerous explanations of why parental divorce negatively influences children's educational attainment. These explanations operate with three major arguments. One line of reasoning focuses on the *stress* associated with parental breakup, another one emphasizes *economic and social deprivation* associated with changing household structure, and the last perspective highlights *selection into divorce* of parents with specific pre-existing qualities (see Amato 1993, 2000 for a review).

Some authors emphasize that parental conflict before and during divorce – rather than divorce *per se* – and the resulting *stress* cause the negative outcomes in children (Amato 1993; Biblarz and Raftery 1999; this is often labelled as "process perspective on divorce"). Not only that the offspring generally suffer from witnessing parental quarrels; they often become part of them and are forced to "choose sides". The relationship between children and parents deteriorates as a result. Moreover, children may develop feelings of guilt and responsibility for the situation. Parental conflict can also serve as a bad behavioural and problem-solving example (Amato

1993). Children's school outcomes or life chances in general are negatively impacted as a consequence.

The detrimental effect of parental breakup does not have a single source. The stress results from an "accumulation of negative events" (Amato 1993: 33-34), i.e. it is produced by the totality of all negative events occurring during and after parental divorce (Amato and Booth 1991). These negative events include not only parental conflict, but also, frequently, diminished contact with one parent and grandparents. Tension in the relationship with the custodial parent may also increase. Further sources of discomfort may stem from parting with pets and changing residence and school (Amato 1993; see also Sun and Li 2009).

The "parental adjustment" perspective emphasizes the pivotal role of the psychological adjustment of the custodial parent after divorce (Amato 1993). The strength of the divorce effect on the child is dependent on the ability of the custodial parent to cope with the divorce and the post-divorce situation. The worse the parent copes, the stronger the detrimental effect on children. This perspective is based on the view that stress interferes with parenting skills (Amato 1993). Since divorce is a highly stressful event, it is predicted "that decrements in the custodial parent's psychological state and ability to function effectively in the parental role following marital dissolution can lower the well-being of children" (Amato 1993: 28).

Parental breakup also leads to *economic and social deprivation*, which also results in poorer school outcomes. Economic hardship reduces the resources available for the children's education. Family dissolution also has indirect effects on children's schooling, since the custodial parent often intensifies her/his work effort to compensate for the income loss and is therefore less often available to help the children with homework and supervise them.

Furthermore, a tight budget may force the custodial parent to move to a cheaper neighbourhood with lower-quality schools (Amato and Booth 1991; Fronstin et al. 2001; Garasky 1995; Sun and Li 2001, 2009). In extreme cases, the adolescent child may be forced to leave school and find a job to contribute to the family budget (Keith and Finlay 1988).

Children in single-parent families lack support, efficient supervision, self-esteem, and relevant role models as a result of losing frequent contact with one of the parents. The parenting of a single parent is often inconsistent, and the relationship between a single parent and the child is less hierarchically structured and more peer-like. Single parents can also hold unrealistic expectations concerning the maturity of the child. Taken together, these factors also impact children's life chances negatively (Amato and Booth 1991; Biblarz and Raftery 1999; Keith and Finlay 1988; Amato (1993) calls this argument "parental loss perspective"). As summarized by Garasky (1995: 92), the negative effect on education stems from the fact that children from single parent families experience a different family hierarchy than their counterparts in intact families: "educational attainment [is seen] as a consequence of parental ability to provide children with the motivation and skills necessary for school achievement. Family disruption (…) weakens the parent-child relationship and reduces the internalization of parental values and role models. […] This may reduce direct supervision, undermine parental control, and handicap the ability to function in institutions that are fundamentally hierarchical, such as education".

The *selection argument* proposes that individuals more prone to divorce also have worse parenting skills (Amato 2000; Biblarz and Gottainer 2000; Biblarz and Raftery 1999; Holley et al. 2006). As summarized by Biblarz and Raftery (1999: 326), "people who divorce, for example, are less stable or less competent at family life. Children who experience their parents' divorce do less well because their parents are less competent, not because of the divorce per se.

(…) The divorce, like the negative child outcomes, may have been a consequence of some pre-existing family dysfunction".

The selection hypothesis also acknowledges differences between divorced and widowed single-parent families. While the "parental loss" theory would predict the same level of well-being for children in any single parent family type, Biblarz and Gottainer (2000) found that children of single widows resemble children from intact families in their educational outcomes and happiness. Furthermore, they also noticed that children of divorced single mothers are significantly worse off than children from both intact and widowed households. This gradient of outcomes seems to be a general finding across a variety of outcomes (Amato 1993).

3 Variations in the Effect of Divorce on Educational Attainment

Parental separation has become a more common experience in most countries. We argue that this rising prevalence of family dissolution may have a changing impact on educational outcomes. Theoretically, both a decrease and an increase in the negative effects of parental breakup on children can be predicted across successive cohorts within countries. The former expectation stems from three sources: increasingly tolerant attitudes and norms, liberalizing divorce legislation, and declining selection on poor parental skills. The latter expectation results from declining levels of parental conflict that may trigger family dissolution. As a consequence, later cohorts contain a larger fraction of children among whom the negative consequences of divorce outweigh the benefits of escaping from stressful environment.

Higher divorce rates are associated with tolerance, liberal legislation, reduced selection on parenting skills, and reduced parental conflict, while lower divorce rates correlate with less

tolerance, more restrictive legislative regulations, high levels of selection on poor parenting skills, and high selection on parental conflict (González and Viitanen, 2006; Goode 1993; Kalmijn 2010; Kalmijn and Uunk 2007). Thus the detrimental effect of divorce should be less severe when divorce is more common, since attitudes and norms are more permissive and the divorced families are stigmatized to a lesser degree as a result (Becker 1993; Dronkers et al. 2006; Prokopec 1972; Wolfinger 1999). Similarly more liberal divorce legislation makes divorce less stressful and thus lessens the harm to both parents and children (Dronkers et al. 2006; Sigle-Rushton et al. 2005). The selection explanation of the disadvantage to children of divorce would also predict the negative effect of parental divorce to be diminishing (Kalmijn 2010). When divorce becomes more common, the splitting couples should be less stigmatized than those with worse parenting skills (Diekmann and Engelhardt 1999; Sigle-Rushton et al. 2005). We call this set of arguments the *declining stress and selection hypothesis.*

On the other hand, the process perspective on divorce (Luepnitz 1979; Morrison and Cherlin 1995; Sun 2001; Sun and Li 2001) and the parental conflict explanation (Amato 2000; Amato et al. 1995; Booth and Amato 2001; Hanson 1999) would lead us to predict increasing disadvantage when divorce is more widespread. Becker's (1993) economic theory of marriage offers a similar prediction. Using the concepts of gain and utility, Becker argues that the utility of marriage was high in the past and thus only high-conflict marriages dissolved. However, as specialization of men in market production and of women in household production declined in Western societies in the second half of the twentieth century, the gains from marriage become smaller (see also Oppenheimer 1997 for a review of this literature). Hence the partners have much less to lose if they break up, so even low-conflict marriages often divorce (see also Wolfinger 1999).

Amato and Hohmann-Marriott (2007) indeed documented an increase in the incidence of dissolution in low-distress marriages. While dissolution of a high-conflict family may have no detrimental effect on the child's well-being and can even bring a relief from a stressful living arrangement, the breakup of a low-conflict marriage may cause much more stress and feelings of loss for the child (Amato et al. 1995; Hanson 1999; see also Kalmijn and Monden 2006 for a similar hypothesis applied to the well-being of parents). This is called the *declining parental conflict hypothesis.*

4 Comparative Research on the Effects of Divorce

Sociologists have been paying increasing attention to variations in the effects of divorce across subpopulations within countries since the 1990s (Amato 2000; Amato and Cheadle 2008; Biblarz and Raftery 1993; Dronkers 1999; Kalmijn 2010; Kalmijn and Monden 2006; McLanahan and Sandefur 1994). Scholars, however, have focused much less on variations in the size of divorce's effect across societies or over cohorts. Notable exceptions that study the association between an individual's divorce and well-being include Stack and Eshleman's (1998) comparative study of 16 countries based on data from the 1980s, Diener and colleagues' investigation of 42 countries in the 1990s (Diener et al. 2000), and Kalmijn's recent study examining 38 countries from the European Value Study/World Value Study databases (Kalmijn 2010). While Stack and Eshleman's (1998) examination indicated equality in the effects of marital status on well-being across countries, Diener et al. (2000) revealed a relatively weak negative association between the size of the divorce effect (i.e. a contrast between the married and the divorced) and the overall tolerance towards divorce in a country. Kalmijn's (2010) analysis of respondents' psychological well-being interacted several macro-level variables (e.g. divorce rate, church attendance,

familialism, and approval of divorce) with individual-level indicators of divorce and found that the individual-level effect of divorce was somewhat weaker when divorce was more common.

Examinations of the stability of the effect of divorce within countries are likewise uncommon, and even more so with children's education as the dependent variable. Existing studies have achieved very ambiguous results, perhaps slightly favoring the no-trend conclusion. Evans et al. (2001) found that the detrimental effect of parental divorce on the odds of secondary school graduation increased over successive birth cohorts in Australia, while the effect of divorce on the likelihood of college completion did not change. Ely et al. (1999) compared individuals born in 1946, 1958, and 1970 in Britain and found no change in the negative effect of divorce on education. Whereas birth cohort was the only instrument for measuring development over time in this analysis, it was taken to approximate concurring changes such as rising unemployment, rising female employment rates, shift to the service sector, and increase in the divorce rate. The authors did not include any direct measurements of these variables into their models. Sigle-Rushton et al. (2005) similarly identified no change in divorce effect over time in Britain. The authors also used birth cohorts as the basis for their comparison and employed no other measurement of social change, despite remarking on the increase in divorce rates throughout the 1970s and the increased likelihood of the 1970 birth cohort to have experienced parental divorce and elevated divorce rates. Gähler and Garriga (2013), who studied psychological maladjustment of children, also found a weakening effect of divorce between two Swedish surveys carried out in 1968 and 2000 (this result, however, was not statistically significant).

Comparisons of the well-being of children in divorced and step-families offer ancillary evidence in favor of a growing negative individual-level effect of divorce. For instance Andersson (2002) pointed out that countries with relatively higher family disruption rates also exhibit higher rates

of re-marriage. It has been recognized that children in stepfamilies fare worse compared to their counterparts in two-biological-parent families (Garasky 1995; Raley et al. 2005). It has also been observed that remarriages are more unstable than first marriages (Coleman et al. 2000; Cherlin 1978, 1981; Furstenberg and Spanier 1984; Halliday 1980). Some authors argue that it is the experience of multiple family transitions, rather than the experience of divorce or any particular family type, that has the most pronounced impact (Aquilino 1996; Raley et al. 2005). It therefore can be expected that children of divorced parents are more socioeconomically disadvantaged in the context of high divorce rates (and therefore high remarriage and a higher number of transitions experienced in household composition) than children of divorced parents in contexts with less divorce (and hence less re-marriage and more overall stability in household composition).

Since the empirical evidence regarding variations in the size of the effect of divorce on children's education has been mixed so far (see also Amato and Keith 1991a; Evans et al. 2001; Sigle-Rushton et al. 2005), our analysis aims to explore which of the hypotheses outlined above has more empirical support. Both of the hypotheses relate variations in the size of the divorce effect to changes in the prevalence of divorce: Is the negative effect of breakup stronger (as is predicted by the declining parental conflict perspective) when divorce is more common, or is it weaker (as is predicted by the declining stress and selection hypothesis)?

5 Data and Variables

We use data from the first wave of surveys organized under the Generations and Gender Programme (United Nations 2005).[1] This data set is unique due to its internationally comparative nature and the indicators contained in the questionnaire (it maps respondents' family situation during childhood in a rather detailed way, and it also contains cross-nationally harmonized measures of respondent's and parents' educational attainment). As of this writing, data from 15 countries were available in the GGP data archive, plus we had access to the Czech data through one of the co-authors who had been a member of the Czech GGP team. In principle we wanted to use as many countries as possible, yet some countries could not be utilized. Austrian data were left out of the analysis, since the sample only covered a narrow age range. Russian and Georgian data were not used because no reasonably good measures of the context-level variables (primarily the crude divorce rate, see below) were available from external sources. Hence we investigate 13 countries altogether: Australia, Belgium, Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Italy, Lithuania, the Netherlands, Norway, and Romania. Interviews were conducted – depending on local circumstances – between 2001 and 2010. We see the data as hierarchically structured, with individual respondents nested within macro-level contexts. The macro-level contexts are represented by each unique combination of country and birth cohort. Since we have 13 countries and 4 birth cohorts (see below), we examine 52 macro-level contexts.

[1] These data were – with the exception of the Czech sample – obtained from the GGP Data Archive and were created by the organizations and individuals listed for each particular data set at http://www.unece.org/pau/ggp/acknowledge.htm.

The dependent variable in our analysis is a binary indicator of a respondent's college graduation (coded 1 if respondent ever graduated from college and 0 otherwise; college graduation implies category 5 or 6 on the ISCED scale included in the data set). A dichotomous variable indicating that respondent's parents broke up before his/her 18th birthday is our key explanatory variable. This measure is created on the basis of two questions from the questionnaire. Respondents were asked whether their biological parents ever broke up[2], and how old were they at the time of parental breakup. The cutoff point at 18 years was chosen because students typically leave secondary education and enter college soon after their 18th birthday (cf. Fischer 2007). In principle, family dissolution affects children of any age (Liu 2007; Palosaari and Aro 1994). There does not seem to be any widely-used theory-based age limit beyond which parental divorce would be expected to have no effect. Age limits used in various analyses seem to be mostly pragmatic, oftentimes related to the nature of the data or to the dependent variable (see e.g. Chase-Lansdale et al. 1995; Fronstin et al. 2001; Furstenberg and Kiernan 2001; Kiernan 1997; Ross and Mirowsky 1999). When not limited by the data, authors use an array of different

[2] Breakup is not conceptually identical to divorce, but the GGS questionnaire does not let us distinguish divorce/separation of married parents and splitting up of a cohabiting couple. To the extent that cohabitation is a less institutionalized union (Nock 1995), confers fewer advantages to members of the household (including children's educational opportunity, see Brown 2004; Bulanda and Manning 2008; Kennedy and Bumpass 2008; Manning and Lamb 2003; Raley et al. 2005; Soons and Kalmijn 2009), and breaks up more often and more easily than marriage (Manning et al. 2004; Wu and Music 2008), the splitting of a cohabiting couple should have a less pronounced negative effect on children than divorce. Therefore, our estimates of the effect of breakup may be taken as the lower boundary estimate of the divorce effect.

ages, usually without much direct explanation. For example, the age limit used by Liu (2007) was 18 years; Garasky (1995) on the other hand used age 14. Some authors follow the incidence of parental divorce well into respondents' twenties (e.g., Aquilino 1994; Furstenberg and Kiernan 2001; Kiernan 1997). Since there is little consensus regarding what the most appropriate age limit is for our analysis, we also conducted all analyses with a threshold set at 15 years to see if the results are sensitive to this particular decision (we report the sensitivity analyses below). We also use respondent's gender (coded 1 if male, 0 if female) and parental educational attainment as controls. Parental education is based on a slightly simplified ISCED scale; we distinguish 3 substantive categories (up to lower secondary, upper secondary, tertiary) plus a separate category for respondents without a valid response.[3] We use the education of the better-educated parent. Country is used as a set of 12 dummy indicators (Australia serves as the reference category when country enters the analysis as a set of binary indicators). We differentiate four birth cohorts (1940-1949, 1950-1959, 1960-1969, 1970+; although the data file contains individuals born before 1940, we set the birth year limit to avoid distortions caused by unreliable historical macro-level data).

Explicit indicators of country and cohort are only used in some of the models. In other models, these indicators are replaced by two continuous macro-level explanatory variables – crude divorce rate (CDR) and the percentage of individuals in each cohort attaining tertiary education. These variables were taken from an external source (UN Demographic Year Books, Eurostat,

[3] We did, however, carry out all analyses without respondents who had not reported their parents' highest level of schooling. The results are reported below.

OECD).[4] Divorce rate is our key theoretical concept (see above), whereas educational expansion is a control variable used to obtain unbiased estimates of the effects of CDR (and its interactions), because educational expansion is correlated with divorce rates (both are typically higher in more advanced societies) and also seems to impact on inequality of education opportunity (see e.g. Shavit et al. 2007).

The proportion of respondents with tertiary education by country and cohort is shown in Fig. 1. Clearly, enrolments grew in all countries. The share of people with tertiary education varies between 7 and 28 % among individuals born in the 1940s, and then grows to 11 – 34 % in the cohorts born around 1960. The share of university graduates reaches to between 17 and 43 % in the youngest birth cohorts. The best educated populations were in the Netherlands, Australia, Belgium, France, and Norway, while the least educated populations were in Hungary, Romania, Italy, and the Czech Republic for most of the twentieth century.

<Fig. 1 about here>

All countries investigated in this paper experienced increasing divorce rates during the twentieth century. Figure 2 shows that the crude divorce rate was very low (below 1) until WWII. CDR

[4] Divorce rate data were only available for the period after 1960 in Estonia, and we also lack CDR data for 1948-1959. We used a non-linear extrapolation to fill in the missing data points. The extrapolation was based on data from 1960-1965. We decided not to use more recent years for the extrapolation, since a legislative change in 1965 resulted in a sudden increase in CDR from 2.3 to 3.2 between 1965 and 1966.

then followed an upward trend in all countries, but at differing paces. In addition, there were several changes in national divorce laws that caused sudden upward and downward shifts which, however, did not reverse the main trends in the long run (see Appendix for a description of selected major changes in national divorce legislations as well as changes in CDR).

<Fig. 2 about here>

Each unique combination of country by cohort (i.e. each macro-context) was assigned values for its macro-level variables on the basis of the following procedures: Divorce rates were computed using information on the known average age at parental breakup of the children that actually experienced breakup in that specific country/cohort combination before their 18th birthday (respondents were typically around 8 years old at the time of parental breakup). For each macro-level unit we took the crude divorce rate in the given country in years when the children's parents were typically splitting up, and averaged them (for instance the mean age at parental breakup was 10 in the Australian cohort born 1940-1949, so the average divorce rate of the 1950-1959 period was assigned to all respondents in this cohort; the actual value is 0.8). Similarly, we averaged the share of people with university education in each macro-level unit to obtain a measure of educational expansion. We rescaled both variables to the 0-1 range, where 0 corresponds to the minimal value found in the data (in case of the crude divorce rate, the lowest value was 0 in Italy in the older cohorts) and value 1 to the highest value (the highest average divorce rate is 4.05 and is found in the youngest cohort in Estonia).

<Table 1 about here>

The original data contained 130,244 cases (individual respondents) in our set of 13 countries. We limited the dataset to respondents born after 1940 (see above). Furthermore, we only utilize respondents older than 26 years at the time of the interview to make sure that they had enough time to obtain tertiary education. These choices reduced the sample size to 94,502 cases (i.e. 73 % of the original sample size). After cases with missing data on the dependent variable (respondent's education), parental breakup, and respondent's gender were deleted, we obtained a final sample of 93,413 cases, i.e. only 1 % of eligible cases were lost due to missing responses (see Table 1). Some of the sensitivity analyses reported below may be based on a slightly different sample (this will be explicitly emphasized in the respective paragraph).

6 Results

6.1 Binary Logistic Regression Models

We begin with a series of binary logistic regression models predicting college graduation (the goodness of fit statistics of these models are presented in Table 2). As a first step, we want to see if the effect of parental breakup varies over cohorts within countries, with and without other level-1 controls. Our first model contains only three predictors: parental breakup, country, and cohort (this is Model 1 in Table 2). Then, we add the interaction between cohort and breakup into the model and create Model 2. Statistical comparison of these two models tells us that – by criteria of classical inference – we shall not omit the interaction from Model 2 (the likelihood ratio test comparing the two models yields $L^2 = 11.0$ with three degrees of freedom, which implies a p-value of 0.012). When judged by the two information criteria presented in Table 2

(AIC and BIC), we do not reach a clear conclusion – AIC suggests that we should favour the model with interactions, while BIC is in favour of the more parsimonious model.

We carry out a similar test by comparing Model 3 and Model 4, which also control for other level-1 variables (respondent's gender and parental education), but are otherwise identical to Models 1 and 2. The comparison of Model 3 and Model 4 returns $L^2 = 4.5$ (with 3 d. f.; p-value = 0.213), which indicates that the interaction between parental breakup and cohort is not statistically significant once the controls are introduced into the model. Also AIC and BIC favour Model 3 over Model 4.

<Table 2 about here>

The estimated coefficients of Model 2 are presented in Table 3. We see that the effect of parental breakup is not significant in the 1940-1949 birth cohort, though it is negative (the effect on the log odds of completing tertiary education is -0.141). The effect becomes more negative in each subsequent birth cohort. For instance, the difference in the log odds of graduating from college between children of divorced parents and children from intact families was -0.276 (= -0.141-0.135; see Table 3) in the 1960-1969 birth cohort and it further grew to -0.417 (= -0.141-0.276, see Table 3) in the post-1970 birth cohort. The difference in the effect of breakup between the eldest and youngest cohort is statistically significant at the 0.01 level (see Table 3).

<Table 3 about here>

Table 3 also presents the estimated coefficients of Model 4. We have seen that the interaction between parental breakup and cohort as a whole fails to reach standard levels of statistical significance. Yet, when we look at the individual elements of this interaction (and the corresponding main effects), we see a pattern of an increasingly negative effect of breakup over cohorts. First, Model 4 shows that breakup has a statistically significant net effect in the oldest cohort. Once we control for parental education and respondent's gender, the main effect of breakup on the log odds of college completion is -0.237 (see Table 3), which is statistically significantly different from 0 at the 0.05 level. Furthermore, we see stronger negative effects over cohorts: in the most recent cohort the effect of breakup is -0.422 (= -0.237-0.185, see Table 3). We see that the net effect of breakup is fully comparable in size with the total effect. The difference in the sizes of the slopes in the eldest and youngest cohorts is significant at the 0.1 level (see Table 3). [5]

Overall, we can conclude that the negative effect of parental breakup on children's education has grown (at least) in the most recent birth cohort. The same conclusion holds for the total effect as well as for the net effect controlling for respondent's gender, parental education, and country.

[5] If we limit our sample to respondents who reported their parents' education and re-estimate Models 2 and 4, we see the same pattern. The main effect of breakup on the log odds of college graduation is -0.092, and the effect in the most recent cohort is -0.401 (= -0.092-0.309) in the re-estimated Model 2. Similarly, in re-estimated Model 4 the main effect is -0.240, and the effect in the latest cohort is -0.458 (= -0.240-0.218). The difference between the two slopes is statistically significantly different from 0 at the 0.01 level in both Model 2 and Model 4. Applying listwise deletion of missing data reduces the sample size to 88,941 cases, but this does not affect the substantive conclusions.

We attribute the non-significant total effect of breakup in the eldest cohort of Model 2 to the confounding effect of parental education: better educated parents were more likely to divorce in the older cohorts, and the negative net effect of divorce was offset by the positive effect of parental education. This confounding effect became less salient (or even disappeared) in more recent cohorts with the reversal of the education gradient of divorce (Härkönen and Dronkers 2006).

Other estimated parameters of Model 4 are not surprising: the main effect of country indicates that higher education is more easily accessible in some countries and less accessible in some other countries (e.g. the Czech Republic, Hungary, Italy, Lithuania, and Romania exhibit particularly low odds of completing university education, net of other factors). We further observe that men, on average, have lower chances of obtaining tertiary degrees than women (cf. Buchmann and DiPrete 2006). The main effect of cohort reflects educational expansion – the growing odds of obtaining tertiary degrees in the population. Obviously, the chances of college graduation are strongly influenced by parental education: the log odds of obtaining a bachelor's diploma are higher by 2.383 among children of college educated parents in comparison to children whose parents only had lower secondary (or lower) education (see Table 3).

6.2 Random-intercept Logistic Regression Models

Now we proceed to present multi-level random-intercept logistic regression models of college graduation. We use two different specifications of the multi-level model. We start with two continuous level-2 variables – the crude divorce rate and share of individuals with tertiary education (these level-2 variables are utilized along with level-1 covariates including gender, parental education, and breakup). The second specification adds also country fixed-effects into

the model. We use this latter specification to make sure that our results are not biased by some omitted country-level variable.

<Table 4 about here>

We are primarily interested in testing a cross-level interaction between level-1 measure of parental breakup and the level-2 measure of the crude divorce rate. As before, we use the likelihood ratio test as well as AIC and BIC to compare models with and without this interaction. AIC and BIC values are based on the deviance statistic and are computed using the formulas proposed by Hox (2010: 50-51); the number of individual respondents is used as the number of observations in the calculation of BIC (see STATA Corp. 2011: 159-163).[6] Table 4 presents goodness of fit statistics of all multi-level models.

Model 5 employs all explanatory variables additively, while Model 6 also adds the cross-level interaction between breakup and divorce rate. By criteria of classical statistical inference we should prefer Model 6 to Model 5, i.e. we should not leave the interaction out of the model (the comparison of the two models leads to $L^2 = 9.9$ with one degree of freedom, which implies $p = 0.002$). Again, AIC and BIC tend to contradict each other – AIC would favour keeping the interaction, whereas BIC indicates no difference in model fit between the models, in which case

[6] The calculation of the BIC statistic corresponds to a situation when are all level-1 observation independent. This assumption is violated in our case. We therefore have higher confidence in AIC, since BIC uses sample size in its calculation and is thus likely to show an unsubstantiated bias towards more parsimonious models.

the more parsimonious Model 5 should be preferred. We are inclined to keep the interaction in the model and inspect its substantive significance.

Estimated effects of Model 6 are presented in Table 5. We see from the main effect of parental breakup that parental separation has a slight negative effect on the odds of college graduation when the crude divorce rate is 0, i.e. when the divorce rate is at its minimum observed in the data (the effect on the log odds of college graduation is -0.140, which is significantly different from 0 at the 0.1 level). The interaction between parental breakup and divorce rate tells us that the effect of breakup becomes more negative with higher divorce rates. When the divorce rate reaches its maximum in our data set, the effect of parental breakup on the log odds of college graduation is -0.607 (= -0.140-0.467, see Model 6 in Table 5).

Models 7 and 8 contain also country fixed-effects in addition to all effects already present in Models 5 and 6. Yet, comparing Models 7 and 8 leads to the same conclusion that we achieved earlier – we should keep the cross-level interaction between parental breakup and crude divorce rate in the model (by the criteria of classical inference, the test of the hypothesis that the interaction is in fact zero leads to $L^2 = 10.5$ with 1 d. f., $p = 0.001$; also AIC is in favour of keeping the interaction, whereas BIC is not; see Table 4).

<Table 5 about here>

Inspecting the estimated parameters of Model 8 (see Table 5), we again see that the negative net effect of parental breakup becomes more negative when divorce rates are higher. For instance, the negative effect of parental breakup on the log odds of college completion is -0.137 when divorce rate is at its minimum level (this effect is statistically significantly different from 0 at the

0.1 level). The negative effect of breakup grows to -0.615 (= -0.137-0.478, see Table 5), when divorce rate reaches it maximum. Other effects in Model 8 bring no surprises – males, on average, have lower odds of obtaining a college degree; parental education has a strong positive effect on respondent's education. Educational expansion seems to improve the chances to obtain college degrees and divorce rate, net of everything else in the model, has a negative effect on educational attainment. [7]

6.3 Additional Sensitivity Analyses

Redefining the main explanatory variable (parental breakup) and using a different cutoff age has no apparent effect on the results. When we move the decisive cutoff point to 15 years and re-estimate all models, we still see the same patterns of interactions. For instance, in Model 2 the main effect of breakup would be slightly reduced (from -0.141 in Table 3) to -0.113 (see Table 6, Model 2A) and the interaction with cohort is slightly more pronounced, so that the effect in the youngest cohort is -0.455 (= -0.113-0.342). The difference of the two slopes in the youngest cohort is statistically significant at the 0.05 level in Model 2A (see Table 6).

[7] As a robustness check, we limited the sample to respondents who reported their parents' education (N = 88941) and re-estimated Model 8. The pattern of the cross-level interaction between individual-level breakup and divorce rate persists unchanged. The main effect of breakup on the log odds of college graduation is somewhat more negative (-0.174) in this sample and is statistically significantly different from 0 at the 0.05 level. The effect of breakup grows to -0.625 (= -0.174-0.451) if the context-level divorce rate reaches the maximum observed in the data. The difference between the two effects is statistically significantly different from 0 at the 0.01 level.

<Table 6 about here>

Similarly, Model 4A confirms the existence of the interaction between breakup and cohort even with this alternatively specified indicator of breakup. The main effect of breakup appears somewhat weaker (-0.192, see Table 6, Model 4A) than it was before (-0.237, see Table 3, Model 4). On the other hand, the interaction between breakup and cohort is stronger, and reaches a higher level of statistical significance. The effect of the breakup is -0.441 (= -0.192-0.249, see Table 6) in the most recent cohort. The difference between the breakup effect in the eldest and the youngest cohort is statistically significant at the 0.05 level, whereas it was significant at the 0.1 level with the original definition of parental breakup.

We utilized this alternative definition of parental breakup also in the random-intercept logistic regression models with little deviation from the already observed pattern. For instance, in Model 6A we see that the main effect of breakup is -0.073 when divorce rate is at its minimum and it increases to -0.650 (= -0.073-0.577, see Table 7, Model 6A) when divorce rate reaches its maximum observed in the data, i.e. is only slightly more negative than in Model 6. Similarly, the main effect of breakup is reduced somewhat in Model 8 (from -0.137 in Model 8 to -0.069 in Model 8A, see Tables 5 and 7). But even Model 8A documents that the cross-level interaction between breakup and divorce rate is rather strong and significant (the negative effect of breakup is further reduced by -0.589 if we move from the lowest CDR to the highest CDR observed in our data; this interaction is statistically significant at the 0.01 level, see Table 7).

Furthermore, we wanted to see if any country in our sample may have had a particularly strong influence on the results. Hence, we checked whether omitting any single country from the

sample would alter the results and found that the results are quite robust. For instance, we have seen that the main effect of parental breakup on the log odds of college completion was -0.141 in Model 2, and the interaction between breakup and the most recent cohort was -0.276. When re-estimate this model 13 times omitting one country in each run, we obtain a range of estimates of both the main effect of breakup and of the interaction. The main effect varies between -0.102 (when deleting Germany from the data set) to -0.205 (when omitting Estonia). The interaction ranges from -0.179 (when Estonia is omitted) to -0.351 (when the German data are not included in the sample). The difference between the effects of breakup in the oldest and youngest cohort turns out to be statistically significant at the 0.05 level in 12 out of the total 13 model re-estimations. The only exception occurs when we omit the Estonian data from the analysis.
We carried out the same procedure in the context of the random-intercept logistic regression model (Model 6). There we see that the main effect of parental breakup varies between -0.112 (when the Netherlands is omitted from the analysis) and -0.185 (when the Australian data are not used), and the cross-level interaction varies between -0.365 (without Australian data) and -0.535 (when Hungarian data is left out). These procedures reveal that the interaction between breakup and divorce rate is statistically significant at the 0.05 in all 13 re-estimation runs. We conclude that no single country seems to be driving the results observed above.

7 Conclusions and Discussion

This paper analysed variations in the effect of parental breakup on children's odds of attaining tertiary education in 13 countries and 4 cohorts. We focused on the effect of the experience of parental separation when controlling for parental socioeconomic status and other variables. Our analysis makes a contribution to this field of research in three ways: (1) We have examined the

size of the family dissolution effect on children's education across countries, which has never been done so far. (2) We have estimated variations in the effect of breakup across a relatively large group of contexts (both countries and cohorts), which makes our results quite robust and generalizable. (3) We have linked the separation effect explicitly to prevailing divorce rate and estimated a multi-level model with an embedded cross-level interaction. This approach allows for a more direct inference of the mechanism responsible for this variation and is superior to inferences based solely on comparisons across countries and/or over cohorts.

We evaluated two competing hypotheses: (1) declining stress and selection hypothesis and (2) declining parental conflict hypothesis. Both of them are related to the variations in the prevalence of divorce across contexts. The hypothesis of declining parental conflict assumes that the disadvantage related to parental separation increases over cohorts and is higher when more families break up. As family dissolution becomes more common, even couples with less conflict separate. Then the child is negatively affected by loss of the family rather than relieved from a dysfunctional parental relationship. This explanation was supported by the analysis: indeed *the negative effect of parental separation is stronger (i.e. more negative) in contexts with higher prevalence of divorce*. We observed an increasing negative effect over cohorts within countries, which is consistent with the trend observed by Evans et al. (2001) in Australia, while studying completion of secondary education. Moreover, we were able to link the size of this effect directly to the prevailing divorce rates in the given contexts, which no previous study accomplished.

The main finding holds vis-à-vis partial model re-specifications, and appears to be rather robust. For instance, we used both standard binary logistic regression and multi-level logistic regression (with and without several level-1 controls) to identify consistent substantive findings. Moreover, modifying the operational definition of the main explanatory variable (parental separation) and

taking all breakups before age 15 (instead of age 18 as we did in the main part of the analysis) does not change the results virtually at all. Furthermore, a re-definition of the set of countries has little effect on our conclusions. Finally, if we apply listwise deletion of cases with missing parental education (instead of keeping these as a separate category in the analysis), we see very little change in our findings.

This result illustrates how population trends feed inequality. Most modern countries have been experiencing increasing divorce rates in recent decades. This paper has illustrated that this development exacerbates the disadvantage that children from broken homes bring into their lives. This finding hints that stratification scholars should pay more attention to the effects of growing variability in family forms experienced by children. This variability includes, but is not limited to, children of divorced, cohabiting, single, and step-parents, all of which are increasingly present in many modern societies.

Our result about growing detrimental consequences of breakup contrasts with Kalmijn's (2010) paper, which studied the effect of own divorce on *adult wellbeing* and showed that the negative effect diminishes when divorce becomes more common. The reason for such inconsistency might be two-fold. First, we studied the consequences of parental separation on children, while Kalmijn investigated the adults who divorced themselves. It is possible that divorce affects adults (who are more directly involved in making the decision about divorce) differently than children (who have little power to influence their parents' separation). For instance, at least some adults may choose divorce correctly anticipating that their well-being would improve thereafter, and hence the average negative effect of divorce may be driven towards zero. This may occur more frequently in countries with higher prevalence of divorce. If the share of these adults increases, the average effect of divorce would diminish. Second, the outcome variables differ. We focused

on educational attainment (college graduation), while Kalmijn studied the self-reported level of well-being. While any disruption of the educational career may have a lasting effect, since school re-entry is still a rather uncommon phenomenon, well-being may improve over time, for instance after re-marriage (cf. Shapiro 1996; Weingarten 1980, 1985). Since divorce and re-marriage rates tend to be correlated, people enjoy the positive effects of re-marriage more often in recent decades, and thus the effect of divorce is mitigated by remarriage. However, parental re-marriage may not have the same positive consequence for children's schooling, since step-parents might be less willing to invest into education of their step-children, and prefer to support their biological children (cf. Case et al. 2001; Pong 1997; Stewart 2010; Tillman 2007).

8 Appendix: Selected Historical Changes in Divorce Legislations and Divorce Rates

In general, 20th century Europe moved towards both more liberal divorce legislation and higher divorce rates (for more see Antoloskaia 2000). The interconnectedness of these two trends, however, remains a matter of discussion (Allen 2004; Gonzáles and Viitanen 2006; Kalmijn 2007; Kneip and Bauer 2009; Smith 2004).

Considering our sample of countries (Australia, Belgium, Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Italy, Lithuania, Netherlands, Norway, and Romania), the crude divorce rate rose steadily and the legislation became gradually more liberal for the most part of the century. In Australia, the main legislative change occurred in 1975 when at-fault divorce was replaced by irretrievable breakdown (Finlay 2001). The change was reflected in divorce rates, which rose from a level of 1.7 in 1975 to 4.5 in the following year. Then the rate started to drop again – from the levels around 3 to levels around 2. Similarly, when obtaining divorce was made easier in Belgium in 1994 (Pintens 2002), the crude divorce rate increased from 2.2 in 1994 to 3.5 in 1995, and then stabilized around the level of 3. Along the same lines, a sharp decline in divorce rates can be seen in the case of the Czech Republic and Romania, tying up with divorce legislation changes. In the Czech Republic, the 1998 change lead to the decline from 3.1 in 1998 to 2.3 in 1999 (Hrušáková 2002). In Romania, the 1966 change (Muresan et al. 2008; Boldureanu and Paduraru 2008) resulted in an even more pronounced drop – while in 1965 the rate was 1.9, in 1966 it was 1.4, and then 0.0 and 0.2 in 1967 and 1968, respectively. In both instances, the rates then returned to their previous levels. In Hungary, only the 1945 change (see Weiss and Szeibert 2002) seems to have had an effect: divorce rates around 0.5 rose to levels

around 1.5 and 2 during the following years. In the Netherlands, the 1970 liberalization (see Boele-Woelki et al. 2002) was followed by a steady increase in the divorce rate, from levels around 1 to levels around 2. In Italy divorce was legalized in 1970, and since then the rate has been rising steadily (Patti et al. 2002). In Estonia, the divorce rate was increasing between the 1960s and the first half of the 1990s, from the levels around 2 to levels around 4. In 1995 the rate was as high as 5.2, but then it started to decline – all the way down to the level of 2.2 in 2010 (a new family act was passed in 1995; Rootalu 2010).

In other countries, legislative changes did not impact divorce rates as dramatically; this was true for Bulgaria[8] (see Todorova 2002), France (for more see Ferrand 2002), Germany (Martiny and Schwab 2002), Lithuania, and Norway (Sverdrup 2002; Hyggen and Skevik 2002) where there was a steady rise to current levels. Nowadays, Belgium is considered to have one of the highest crude divorce rates, around the level of 3. This is mostly the case for Belgium's region of Wallonia, however, not Flanders where divorce is less frequent and is viewed negatively (Snoeckx et al. 2007). In 2010, the crude divorce rate for our selected countries was as follows: 2.3 in Australia, 3.0 in Belgium, 1.5 in Bulgaria, 2.9 in the Czech Republic, 2.2 in Estonia, 2.1 in France, 2.3 in Germany, 2.4 in Hungary, 0.9 in Italy, 3.0 in Lithuania, 1.9 in the Netherlands, 2.4 in Norway, and 1.5 in Romania (see Table A).

[8]In Bulgaria, secular divorce legislation was introduced in 1945 (Todorova 2002); around this time we can see a rise in the crude divorce rate from the levels around 0.2 to levels around 1 (Table A).

Table A. Crude divorce rates in selected countries 1920-2010.

	Australia	Belgium	Bulgaria	Czechia	Estonia	France	Germany	Hungary	Italy	Lithuania	Netherlands	Norway	Romania
1917	0.1												
1918	0.1												
1919	0.2			0.2									
1920	0.2	0.4		0.4		0.7	0.6	0.8			0.3	0.2	0.5
1921	0.3	0.4		0.5		0.7	0.6	0.8			0.3	0.2	0.5
1922	0.2	0.4		0.5		0.7	0.6	0.8			0.3	0.2	0.5
1923	0.3	0.4		0.5		0.7	0.6	0.8			0.3	0.2	0.5
1924	0.3	0.4		0.4		0.7	0.6	0.8			0.3	0.2	0.5
1925	0.3	0.3		0.4		0.5	0.6	0.7			0.3	0.3	0.5
1926	0.3	0.3		0.4		0.5	0.6	0.7			0.3	0.3	0.5
1927	0.3	0.3		0.4		0.5	0.6	0.7			0.3	0.3	0.5
1928	0.3	0.3		0.5		0.5	0.6	0.7			0.3	0.3	0.5
1929	0.3	0.3		0.4		0.5	0.6	0.7			0.3	0.3	0.5
1930	0.3	0.3	0.3	0.5		0.5	0.6	0.6			0.4	0.3	0.4
1931	0.3	0.3	0.2	0.5		0.5	0.6	0.5			0.4	0.3	0.4
1932	0.3	0.3	0.2	0.5		0.5	0.6	0.5			0.4	0.3	0.4
1933	0.3	0.3	0.2	0.5		0.5	0.6	0.6			0.4	0.3	0.4
1934	0.3	0.3	0.3	0.6		0.5	0.8	0.6			0.4	0.4	0.5
1935	0.4	0.3	0.2	0.6		0.5	0.8	0.6			0.4	0.3	0.5
1936	0.4	0.4	0.3	0.7		0.5	0.8	0.6			0.4	0.4	0.6
1937	0.4	0.4	0.3	0.7		0.6	0.7	0.6			0.4	0.4	0.6
1938	0.5	0.4	0.3	0.6		0.6	0.7	0.6			0.4	0.4	0.7
1939	0.5	0.4	0.3	0.7		0.5	0.9	0.5			0.4	0.4	0.6
1940	0.5	0.2	0.3	0.7		0.3	0.8	0.5			0.3	0.3	0.6
1941	0.5	0.3	0.2	0.7		0.4	0.8	0.5			0.4	0.4	0.6
1942	0.5	0.4	0.3	0.7		0.4	0.8	0.5			0.4	0.4	0.6
1943	0.7	0.4	0.3	0.8		0.5	0.8	0.5			0.5	0.4	0.6
1944	0.8	0.4	0.2	0.9		0.4	0.8	0.5			0.5	0.5	0.6
1945	1.0	0.4	0.9	0.9		0.6	1.8	0.2		0.0	0.5	0.6	0.9
1946	1.0	0.7	0.9	1.2		1.3	1.8	0.9		0.0	1.1	0.7	1.3
1947	1.2	0.8	0.8	1.2		1.4	1.8	1.0		0.1	0.9	0.7	1.2
1948	0.9	0.8	0.9	1.2		1.2	1.8	1.2		0.2	0.8	0.7	1.1
1949	0.8	0.7	0.9	1.2		1.0	1.8	1.4		0.2	0.7	0.7	1.3
1950	0.9	0.6	0.8	1.3		0.9	1.9	1.2		0.2	0.6	0.7	1.5
1951	0.9	0.5	0.8	1.1		0.8	1.5	1.2		0.2	0.6	0.7	1.2
1952	0.8	0.5	0.7	1.2		0.8	1.3	1.4		0.3	0.6	0.6	1.4
1953	0.9	0.5	0.6	1.1		0.7	1.2	0.9		0.3	0.5	0.6	1.3
1954	0.7	0.5	0.6	1.1		0.7	1.1	1.3		0.4	0.5	0.6	1.7
1955	0.7	0.5	0.5	1.3		0.7	1.0	1.6		0.4	0.5	0.6	1.8
1956	0.7	0.5	0.9	1.4		0.7	1.0	1.3		0.4	0.5	0.6	1.7
1957	0.7	0.5	0.9	1.3		0.7	1.0	1.8		0.6	0.5	0.6	1.9
1958	0.7	0.5	0.8	1.4		0.7	1.0	1.5		0.8	0.5	0.6	2.0
1959	0.7	0.5	0.9	1.4		0.7	1.0	2.2		0.8	0.5	0.6	1.7
1960	0.7	0.5	0.9	1.3	2.1	0.7	1.0	1.7		0.8	0.5	0.7	2.0
1961	0.6	0.5	1.1	1.5	2.0	0.7	1.0	1.7		0.9	0.5	0.7	1.8
1962	0.7	0.5	1.0	1.5	2.0	0.7	1.0	1.7		0.9	0.5	0.7	2.0
1963	0.7	0.6	1.0	1.5	2.2	0.6	1.0	1.8		0.8	0.5	0.7	1.9
1964	0.7	0.6	1.1	1.5	2.5	0.7	1.1	1.9		0.9	0.5	0.7	1.9
1965	0.8	0.6	1.1	1.7	2.3	0.7	1.1	2.0		0.9	0.5	0.7	1.9
1966	0.9	0.6	1.0	1.8	3.2	0.7	1.1	2.0		1.8	0.6	0.7	1.4
1967	0.8	0.6	1.2	1.8	3.2	0.8	1.2	2.1		1.8	0.6	0.8	0.0
1968	0.9	0.6	1.2	1.9	3.1	0.7	1.2	2.1		2.0	0.6	0.8	0.2
1969	0.9	0.7	1.1	2.1	3.3	0.8	1.3	2.1		2.1	0.7	0.8	0.4
1970	1.0	0.7	1.2	2.2	3.2	0.8	1.3	2.2		2.2	0.8	0.9	0.4
1971	1.0	0.7	1.1	2.4	3.2	0.9	1.4	2.3	0.3	2.2	0.9	1.0	0.5
1972	1.2	0.8	1.2	2.3	3.3	0.9	1.5	2.3	0.6	2.3	1.1	1.0	0.5
1973	1.2	0.9	1.3	2.5	3.2	1.0	1.6	2.4	0.3	2.5	1.3	1.2	0.7
1974	1.3	1.0	1.3	2.5	3.3	1.1	1.8	2.3	0.3	2.5	1.4	1.3	0.9
1975	1.7	1.1	1.3	2.6	3.4	1.2	1.9	2.5	0.2	2.7	1.5	1.4	1.6
1976	4.5	1.3	1.3	2.5	3.6	1.1	2.0	2.6	0.2	2.9	1.5	1.5	1.7
1977	3.2	1.3	1.5	2.5	3.9	1.3	1.5	2.6	0.2	3.1	1.6	1.5	1.2
1978	2.8	1.4	1.5	2.6	3.8	1.4	1.0	2.7	0.2	3.0	1.6	1.5	1.5
1979	2.6	1.4	1.4	2.5	4.1	1.5	1.6	2.6	0.2	3.2	1.7	1.6	1.6
1980	2.7	1.5	1.5	2.6	4.1	1.5	1.8	2.6	0.2	3.2	1.8	1.6	1.5

1981	2.8	1.6	1.5	2.7	4.1	1.6	2.0	2.6	0.2	3.2	2.0	1.7	1.5
1982	2.9	1.0	1.5	2.7	3.9	1.7	2.1	2.7	0.3	3.1	2.2	1.7	1.5
1983	2.8	1.6	1.6	2.8	4.2	1.8	2.2	2.7	0.2	3.2	2.3	1.9	1.5
1984	2.8	1.7	1.5	3.0	4.1	1.9	2.3	2.7	0.3	3.2	2.4	1.9	1.5
1985	2.5	1.9	1.6	2.9	4.0	2.0	2.3	2.8	0.3	3.2	2.4	2.0	1.4
1986	2.5	1.9	1.1	2.9	3.9	2.0	2.3	2.8	0.3	3.3	2.1	1.9	1.5
1987	2.4	1.9	1.3	3.0	3.9	1.9	2.3	2.8	0.5	3.2	1.9	2.0	1.5
1988	2.5	2.1	1.4	3.0	3.8	1.9	2.3	2.3	0.5	3.2	1.9	2.1	1.6
1989	2.5	2.0	1.4	3.0	3.8	1.9	2.2	2.4	0.5	3.3	1.9	2.2	1.6
1990	2.5	2.0	1.3	3.1	3.7	1.9	1.9	2.4	0.5	3.4	1.9	2.4	1.4
1991	2.6	2.1	1.3	2.8	3.7	1.9	1.7	2.4	0.5	4.1	1.9	2.4	1.6
1992	2.6	2.2	1.1	2.8	4.3	1.9	1.7	2.1	0.5	3.7	2.0	2.4	1.3
1993	2.7	2.1	0.9	2.9	3.9	1.9	1.9	2.2	0.4	3.7	2.0	2.5	1.4
1994	2.7	2.2	0.9	3.0	3.8	2.0	2.0	2.3	0.5	3.0	2.4	2.5	1.7
1995	2.8	3.5	1.3	3.0	5.2	2.1	2.1	2.4	0.5	2.8	2.2	2.4	1.5
1996	2.9	2.8	1.2	3.2	4.0	2.0	2.1	2.2	0.6	3.1	2.3	2.3	1.6
1997	2.8	2.6	1.1	3.2	3.8	2.0	2.3	2.4	0.6	3.1	2.2	2.3	1.5
1998	2.7	2.6	1.3	3.1	3.2	2.0	2.3	2.5	0.6	3.2	2.1	2.1	1.8
1999	2.8	2.6	1.2	2.3	3.3	2.0	2.3	2.5	0.6	3.2	2.1	2.0	1.5
2000	2.6	2.6	1.3	2.9	3.1	1.9	2.4	2.3	0.7	3.1	2.2	2.2	1.4
2001	2.9	2.9	1.3	3.1	3.2	1.9	2.4	2.4	0.7	3.2	2.3	2.3	1.4
2002	2.7	3.0	1.3	3.1	3.0	1.9	2.5	2.5	0.7	3.1	2.1	2.3	1.5
2003	2.7	3.0	1.5	3.2	2.9	2.1	2.6	2.5	0.8	3.1	1.9	2.4	1.5
2004	2.6	3.0	1.9	3.2	3.1	2.2	2.6	2.4	0.8	3.2	1.9	2.4	1.6
2005	2.6	2.9	1.9	3.1	3.0	2.5	2.4	2.5	0.8	3.3	2.0	2.4	1.5
2006	2.5	2.8	1.9	3.1	2.8	2.3	2.3	2.5	0.8	3.3	1.9	2.3	1.5
2007	2.3	2.8	2.1	3.0	2.8	2.1	2.3	2.5	0.9	3.4	2.0	2.2	1.7
2008	2.2	3.3	1.9	3.0	2.6	2.1	2.3	2.5	0.9	3.1	2.0	2.1	1.7
2009	2.3	3.0	1.5	2.8	2.4	2.1	2.3	2.4	0.9	2.8	1.9	2.1	1.5
2010	2.3	3.0	1.5	2.9	2.2	2.1	2.3	2.4	0.9	3.0	1.9	2.4	1.5

Note: with the exception of Australia and Czech Republic, the 1920-1924 and 1925-1929 rates are 5-year averages; Germany includes former GDR; 1940-1944 and 1945-1949 rates are averages for Eastern and Western Germany combined

Source: Eurostat, UN Demographic Yearbook (various volumes 1958-2010)

Below we summarize the history of legislative change in detail for countries where we have been able to obtain some historical descriptions.

The divorce legislation of **Australia** is based on the 1857 English Divorce and Matrimonial Causes Act. The present family law system was introduced in 1975 by the Family Law Act, in which fault grounds were replaced by grounds of irretrievable breakdown (Finlay 2001). Until 1975 the crude divorce rate was relatively low; in 1974 the rate was 1.3, in 1975 it was 1.7. In 1976, however, it reached 4.5. After this rise the rate slowly declined, stopping somewhere around the level of 2.5 (2.5 in 1990; 2.6 in 2000; 2.3 in 2010).

The divorce legislation of **Belgium** is based on the Napoleonic Code (1804). More or less stable between 1804 and 1974, divorce was made easier in 1994. Nowadays, the most common way of ending a marriage is by mutual consent (Pintens 2002). Divorce rates have grown dramatically over last thirty years, and now are among the highest in Europe (the crude divorce rate was 2.0 in 1990, 3.5 in 1995, 2.6 in 2000, and 3.0 in 2010). However, the high divorce rate mostly applies to the region of Wallonia, not Flanders where it is low and where attitudes towards divorce have been observed to be negative (see Snoeckx et al. 2007).

In **Bulgaria** secular divorce legislation was not applied until 1945; the pre-existing canon law, however, recognized some grounds for divorce (Todorova 2002). The legislation was changed in 1952, guided by the idea of marriage preservation, and leading to a ban on divorce by mutual consent. In 1968 grounds for divorce were reduced to two in the first Bulgarian Family Code: mutual consent and irretrievable breakdown. These grounds were preserved in the second Family Code of 1985, which remains the basis of divorce legislation (Todorova 2002). Since the 1960s the crude divorce rate has been around 1.5 (1.3 in 1990, 1.3 in 2000, 1.5 in 2010).

In the **Czech Republic** divorce has been possible since 1919; the complex rules of the "First Republic" (1918-1938) were reformed in 1950. After 1964 the fault ground was gradually abandoned. Divorce rates rose for most of the 20th century. The current family legislation is based on 1998 changes in family law (for more see Hrušáková 2002). This change brought about sharp decline in crude divorce rates, from 3.1 in 1998 to 2.3 in 1999. Since then the rates have returned to their previous levels (2.9 in 2010).

In **France** the possibility of divorce briefly existed in early 19th century (Code Napoleon 1804) but was abolished during the Restoration. The 1884 Loi Naquet established divorce on fault

grounds. Divorce legislation was then reformed in 1975, favouring mutual consent, but keeping other grounds as well (Ferrand 2002). The divorce rate was on the rise since the 1960s and nowadays the divorce is common (Rydell 2002). In 2000s divorce rates were still rising. On the other hand, in the last few years a share of dissolving families with under aged children has been decreasing (Prioux and Mandelbaum 2008). In the year 1990 the crude divorce rate was 1.9; in 2000 it was 1.9; in 2010 it was 2.1.

Unified divorce legislation for the entire **Germany** (German Reich) existed since the year 1900. In 1938 separate Marriage Act was introduced. After 1949, the legislation did differ in the Western and the Eastern parts of Germany. In GDR, the Family Law Code was introduced in 1965 with the irretrievable breakdown as the only ground for divorce. In the GFR, family law was reformed in 1976. Since 1990, the laws of GFR have applied in GDR (Martiny and Schwab 2002). In 1976 the crude divorce rate was 2.0; in the following year it was 1.5. In 1990 the rate declined slightly – from 2.2 in 1989 to 1.9. Then we can observe slow rise to levels around 2 (2.3 in the year 2010).

In **Hungary**, the divorce legislation did not change between 1894 and 1945. The 1945 reform brought about an inclusion of new grounds, while the old grounds were kept. The law was reformed in 1963 and then again in the Act of 1974 to accommodate cases of consent. In the 1974 Act the only ground for divorce was irretrievable breakdown. The Family Act was reformed/ amended again in 1986 and in 1995 (Weiss and Szeibert 2002). In 1945 the crude divorce rate was 0.2; the following year it was 0.9. The other reforms do not seem to have had any particularly pronounced effect on divorce rates. From the 1960s on we can see steady rise in divorce rates; nowadays the levels are around 2.5.

In **Italy**, divorce was made possible in 1970. The law was then amended in 1978 and 1987. The 1987 reform was more important and far-reaching, "emphasis[ing] the nature of divorce as a 'remedy' and stress[ing] the fact that the parties' wish to dissolve their marriage takes precedence over the judge's power to prevent the parties from regaining their single status" (Patti et al. 2002: 4). In 1971 the crude divorce rate in Italy was at the level of 0.3. Neither the 1978, nor the 1987 reforms seems to have had an immediate effect as the divorce rate was the same the follow year (0.2 and 0.5 respectively). However, from the 1970s onwards we can observe a steady increase, with the crude divorce rate at 0.9 in 2010.

The **Dutch** legislation was liberalized in the 1970s. Since 1971 the only ground for divorce in the Netherlands is irretrievable breakdown. However, it is also possible to change one's marriage to registered partnership, which can then be dissolved merely by consent of the partners (Boele-Woelki et al. 2002; Fokkema et al. 2008). The divorce rates increased between the 1960s and 1980s; currently the rates are rather high (Kalmijn et al. 2004) but stable (Fokkema et al. 2008): around 2 (1.8 in 1980, 1.9 in 1990, 2.2 in 2000, and 1.9 in 2010).

In **Norway** divorce has been possible since the 17th century. The 20th century liberalization of divorce legislation was based on liberal laws passed in the 19th century. In 1909 mutual consent after a one-year period of separation was introduced as an addition to the already-existing grounds of fault and irretrievable breakdown. Legislation in this form was preserved in the 1918 Marriage Act. New divorce regime was introduced by the 1991 Marriage Act (in force since 1993) – divorce can be granted after period of separation or non-cohabitation, consent or particular ground is no longer necessary (Sverdrup 2002; Hyggen and Skevik 2002). The divorce rate increased in the 1960s and the 1970s. Nowadays the crude divorce rate is rather high, and according to Tjotta and Vaage (2008) is reinforced by public transfers to divorced families (see

also Clarke and Jensen 2004; Andersson et al. 2006). In the year 1990 the crude divorce rate was 2.4; in 2000 it was 2.2, and in 2010 it was 2.4.

The divorce rate in **Romania** rose after the WWII when a large percentage of population migrated from rural to urban. The divorce legislation was very liberal, but due to the rising number of divorces, divorce was made difficult in 1966. The divorce rate remained low; however, in 1974 it started to return to its previous level (in 1960 the crude divorce rate was 2.0; in 1970 it was 0.4, in 1974 0.9, in 1979 1.6). After the end of the socialist regime, divorce legislation was changed; however, crude divorce rates remained low compared to other European countries, and have not shown a tendency to rise (1.4 in 1990; 1.5 in 2010). The reason might have been the economic situation, and cultural norms which make divorce difficult (Muresan et al. 2008; Boldureanu and Paduraru 2008). In 2011 a new Civil Code made divorce easier for childless partners who agreed to divorce, and for spouses with minor children who agreed on the post-divorce arrangements (Buda 2012).

9 References

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10 Tables

Table 1. Sample characteristics by country. Selected countries from the Generations and Gender Survey (GGS), 2001-2010.

Country (1)	Original sample size (2)	Within age limits (3)	Without missing values (4)	Per cent non-missing (5)[a]	Year of data collection (6)
Australia	7125	4826	4770	99 %	2005-06
Belgium	7163	5195	5077	98 %	2008-10
Bulgaria	12858	8751	8672	99 %	2004
Czech Republic	6973	6730	6502	97 %	2005
Estonia	7855	5371	5346	100 %	2004-05
France	10079	7051	6961	99 %	2005
Germany	10017	6900	6792	98 %	2005
Hungary	13540	9452	9417	100 %	2001-02
Italy	9570	8213	8213	100 %	2003
Lithuania	10036	6482	6386	99 %	2006
Netherlands	8161	6069	6058	100 %	2002-04
Norway	14881	11029	10801	98 %	2007-08
Romania	11986	8433	8418	100 %	2005
TOTAL	**130244**	**94502**	**93413**	**99 %**	**2001-10**

Notes: [a] = (4)/(3)
See text for a description of the sample specification.

Table 2. Goodness of fit statistics of selected binary logistic regression models of college graduation. Selected countries from the first wave of GGS, 2001-2010. Number of individuals N = 93413.

Model	**Model description**	AIC	BIC	LR^2	d.f.	p-value
M1	Country + cohort + breakup	100940.6	101101.2	5619.5	16	<0.0005
M2	M1 + cohort x breakup	100935.6	101124.5	5630.6	19	<0.0005
M3	M1 + parental education + gender	90815.6	91014.0	15752.6	20	<0.0005
M4	M3 + cohort x breakup	90817.1	91043.8	15757.1	23	<0.0005
Contrasts						
M2-M1		-5.0	23.3	11.0	3	0.012
M4-M3		1.5	29.8	4.5	3	0.213

Table 3. Estimated coefficients of selected binary logistic regression models of college graduation. Selected countries from the GGS, 2001-2010. Number of observations N=93413.

Explanatory variable	Model 2	Model 4
Breakup (vs. no breakup) before age 18	-0.141	-0.237**
Birth cohort (1940-1949 is reference category)		
1950-1959	0.265***	0.156***
1960-1969	0.364***	0.068***
After 1970	0.629***	0.103***
Parental education (Up to lower secondary is reference category)		
Not reported		0.166***
Upper secondary		1.072***
Tertiary		2.383***
Male (vs. female)		-0.136***
Country		
Belgium	0.081*	0.500***
Bulgaria	-0.654***	-0.233***
Czech Republic	-1.115***	-1.000***
Estonia	-0.131***	0.183***
France	-0.304***	0.274***
Germany	-0.328***	-0.433***
Hungary	-0.968***	-0.678***
Italy	-1.419***	-0.650***
Lithuania	-0.612***	-0.110**
Netherlands	0.036	0.512***
Norway	0.093**	0.217***
Romania	-1.532***	-0.641***
Interactions		
Cohort x breakup		
1950-1959 x breakup	-0.068	-0.033
1960-1969 x breakup	-0.135	-0.105
After 1970 x breakup	-0.276***	-0.185*
Constant	-0.862***	-1.723***

**** p<0.01, ** p<0.05, * p<0.1*

Table 4. Goodness of fit statistics of selected multi-level binary logistic regression models of college graduation. Selected countries from the first wave of GGS, 2001-2010. Number of level-1 observations (individuals) N = 93413, number of level-2 observations (country x cohort) N = 52.

Model	**Model description**	AIC	BIC	LR^2	d.f.	p-value
M5	Breakup + parental education + gender + expansion + divorce rate	90522.9	90607.9	9378.7	7	<0.0005
M6	M5 + divorce rate x breakup	90514.9	90609.4	9386.7	8	<0.0005
M7	M5 + country	90471.3	90669.6	10332.9	19	<0.0005
M8	M7 + divorce rate x breakup	90462.8	90670.6	10354.4	20	<0.0005
Contrasts						
M6-M5		-7.9	1.5	9.9	1	0.002
M7-M5		-51.6	61.7	75.6	12	<0.0005
M8-M7		-8.5	1.0	10.5	1	0.001

Table 5. Estimated coefficients of selected random-intercept binary logistic regression models of college graduation. Selected countries from the first wave of GGS, 2001-2010. Number of level-1 observations (individuals) N = 93413, number of level-2 observations (country x cohort) N = 52.

Explanatory variable	Model 6	Model 8
Educational expansion	1.760***	1.291***
Divorce rate	-0.931***	-0.869***
Parental breakup before age 18	-0.140*	-0.137*
Parental education (Up to lower secondary is reference category)		
Not reported	0.171***	0.170***
Upper secondary	1.079***	1.084***
Tertiary	2.391***	2.396***
Male (vs. female)	-0.140***	-0.138***
Country (Australia is reference category)		
Belgium		0.365***
Bulgaria		0.036
Czech Republic		-0.214*
Estonia		0.438***
France		0.391***
Germany		-0.263***
Hungry		-0.029
Italy		-0.234**
Lithuania		0.150*
Netherlands		0.464***
Norway		0.046
Romania		0.079
Interaction		
Parental breakup x Divorce rate	-0.467***	-0.478***
Constant	-2.295***	-2.195***
SD (Constant)	0.236	0.098
Rho	0.017	0.003

**** p<0.01, ** p<0.05, * p<0.1*

Table 6. Estimated coefficients of selected binary logistic regression models of college graduation. Selected countries from the GGS, 2001-2010. Number of observations N=93413.

Explanatory variable	Model 2A	Model 4A
Breakup (vs. no breakup) before age 15	-0.113	-0.192*
Birth cohort (1940-1949 is reference category)		
1950-1959	0.265***	0.155***
1960-1969	0.363***	0.063**
After 1970	0.627***	0.100***
Parental education (Up to lower secondary is reference category)		
Not reported		0.164***
Upper secondary		1.070***
Tertiary		2.379***
Male (vs. female)		-0.136***
Country		
Belgium	0.084**	0.508***
Bulgaria	-0.649***	-0.224***
Czech Republic	-1.111***	-0.993***
Estonia	-0.127***	0.187***
France	-0.301***	0.279***
Germany	-0.323***	-0.423***
Hungary	-0.965***	-0.672***
Italy	-1.414***	-0.640***
Lithuania	-0.608***	-0.101**
Netherlands	0.037	0.517***
Norway	0.095***	0.222***
Romania	-1.528***	-0.634***
Interactions		
Cohort x breakup		
1950-1959 x breakup	-0.115	-0.050
1960-1969 x breakup	-0.182	-0.115
After 1970 x breakup	-0.342***	-0.249**
Constant	-0.866***	-1.732***

**** p<0.01, ** p<0.05, * p<0.1*

Table 7. Estimated coefficients of selected random-intercept binary logistic regression models of college graduation. Selected countries from the first wave of GGS, 2001-2010. Number of level-1 observations (individuals) N = 93413, number of level-2 observations (country x cohort) N = 52.

Explanatory variable	Model 6A	Model 8A
Educational expansion	1.754***	1.282***
Divorce rate	-0.935***	-0.874***
Parental breakup before age 15	-0.073	-0.069
Parental education (Up to lower secondary is reference category)		
Not reported	0.167***	0.166***
Upper secondary	1.077***	1.083***
Tertiary	2.388***	2.393***
Male (vs. female)	-0.139***	-0.138***
Country (Australia is reference category)		
Belgium		0.371***
Bulgaria		0.042
Czech Republic		-0.212*
Estonia		0.446***
France		0.394***
Germany		-0.254***
Hungry		-0.026
Italy		-0.231**
Lithuania		0.157*
Netherlands		0.468***
Norway		0.051
Romania		0.080
Interaction		
Parental breakup x divorce rate	-0.577***	-0.589***
Constant	-2.294***	-2.197***
SD (Constant)	0.236	0.098
Rho	0.017	0.003

**** p<0.01, ** p<0.05, * p<0.1*

11 Figures

Figure 1. Proportion of people with tertiary education by birth cohort in selected countries during the 20th century.

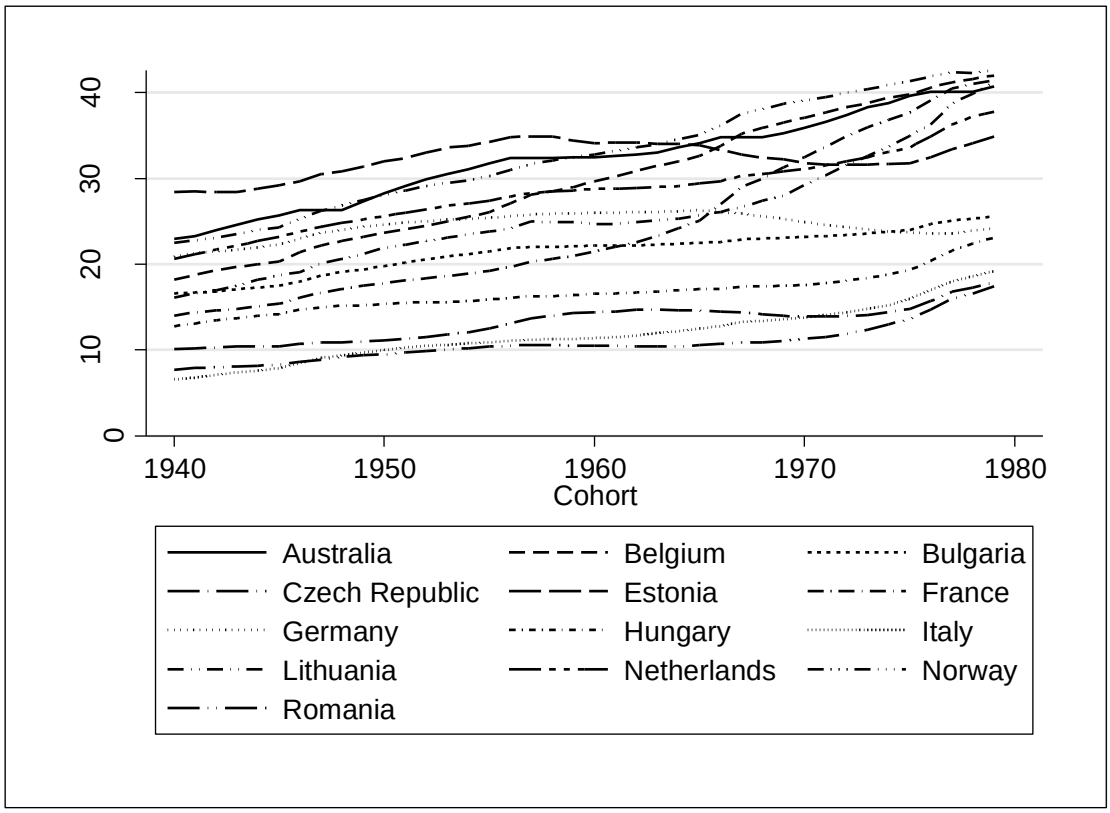

Figure 2. Crude divorce rate by cohort in selected GGS countries during the 20th century.