draft version

Cohabitation vs. Marriage in Bulgaria

The rise of cohabitation and childbearing outside of marriage in Bulgaria: who are the forerunners of the new family model?

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1. Introduction

In the literature cohabitation is generally viewed either as an alternative form of marriage without legalization or as a last stage (a type of engagement) in the courtship process, leading to marriage. The dominant meaning of cohabitation differs from country to country. In the US it is mainly described as a last stage before marriage, while in Northern Europe it tends to be a more permanent relationship (a so-called alternative marriage with childbearing being common in such a relationships).

The economic transition in Bulgaria went hand in hand with considerable changes in the processes of family formation and childbearing. Traditionally, low age at marriage, nearly universal first marriage, and the two-child model prevalence were some of the main demographic features describing the family pattern in Bulgaria during the second half of the 20th century. Legal marriage was the most common pattern of family formation and the children were born within a marriage. After the transition in 1989 a substantially different family formation pattern is observed – crisis in the institution of marriage (a slump in the total first marriage rate, increasing age of first marriage), while cohabitation has become an important and widespread form of union formation, especially for the young generation.

This paper is aimed at studying the development of cohabitation in Bulgaria and to investigate whether the cohabitation is "institutionalized" among the couples as a substitute to the marital family or it is rather recognized as a last stage in a process leading to marriage. Hence the character of the study will be mostly descriptive as far as we do not apply explicit theory in order to explain particular phenomenon. We intend to provide an accurate description combined with a brief interpretation of the process of union formation, where the main stress will be laid on the impact of the family background and the social environment on the union formation process as well as on the transformation of cohabitation into marriage.

2. Development of non-marital unions in Bulgaria

In this section the development in the family formation model in Bulgaria over the last few decades and some main changes that appeared after the transition to a market economy in 1989 will be described. The analysis will be based on data from the vital statistics as well as on GGS data.

2.1 Family formation – empirical evidence

Similar to most post-socialist countries, the crisis in the political system in 1989 in Bulgaria was followed by deep economic and cultural changes. These changes reflected in shifts in the individual's life strategies. The increase of the age at first marriage (by more than 4 years for the period of 15 post-transitional years) suggests postponement of marriage and emergence of other (new for Bulgaria) partnership formations, such as cohabitation, LAT[1] etc.

[1] We did not include LAT couples in our study since we were more interested in highlighting the new *family forms* in Bulgaria, which require living together in a common household, thus we agree that it is necessary to consider the whole variety of new relationships.

The proportion of women, who started their partnership careers with cohabitation[2] is presented in table 1, where for the calculation only women who have already lived in a union were selected.

Table 1

Proportion of first unions beginning by cohabitation by cohorts

age at the interview	*cohort*	*percentage*
45-49	1955-59	23.3
40-44	1960-64	27.7
35-39	1965-69	31.2
30-34	1970-74	39.4
25-29	1975-79	57.7
18-24	1980-86	73.1

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

The proportion of first unions started as cohabitation increase over generations. Starting from levels around 25% for 1955-64 cohorts, it increased to almost 60 for the cohorts 1975-79. For the youngest cohort (aged 18-24 at the interview) the percentage shows very high levels, which is due to the particularly young age of the respondents at entering first union.

The same proportion shown from a calendar time perspective (table 2) illustrates that the cohabitation emerged before the year of transition but the main changes have happened after 1990. In 1970s and 1980s to start living together with a partner (but only after the decision to get married had been announced) was a norm for non-married couples in Bulgaria. Probably this tradition can explain the biggest part of that 20-30% of first unions, beginning by a cohabitation in the 70s and 80s. A considerable increase is observed since

[2] According to the traditions in Bulgaria, the act of engagement gives the couple rights to start living together (it was a social norm also during the socialist times). Relatively soon after the engagement, the wedding ceremony was following. To reduce the number of misleading cohabitations, designed to be followed by marriage, we consider all cohabitations, followed by marriage within four months as direct marriages.

early 90s. Cohabitation as a first union was chosen by nearly 40% from the all couples, entering the first union in the beginning of 1990s. This proportion increased to 65% ten years later.

Table 2

Proportion of first unions beginning in cohabitation over calendar time

Year of union formation	*percentage*
1975-79	25.5
1980-84	27.4
1985-89	29.1
1990-94	39.6
1995-99	53.1
2000-04	64.9

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

As it was mentioned above, cohabitation is a relatively "young" union form in Bulgaria therefore the relatively high percent of cohabitation as a first union for the cohorts 1960s and older (table 1) as well as for the unions formed before 1989 should be highlighted.

There is no explicit question in GGS questionnaire asking about the type of union formation, so we assume the time since a couple started living together until any subsequent event (marriage or dissolution) to be a time in cohabitation. It is a true for unions who ended up in dissolution. For the ones who marry the same partner it might not be the case[3]. On figure 1 we present

[3] Traditionally in Bulgaria, especially in the villages (but also in the cities) couple moves to live together when marriage is decided and announced but not registered yet. Usually the period between engagement and registration of the marriage is not longer than a year but it varies. We have tried to manage such cases in the further modeling, assuming a direct marriage when there is less than 4 months between cohabitation and marriage.

the survival curves for transformation of first cohabitation[4] into a marriage by year of union formation. It is clearly visible that "cohabitations" formed before 1989 are quickly transformed into a marriage[5] (the median time is 4 months) while for the one formed recently takes much longer (the median time is almost two years).

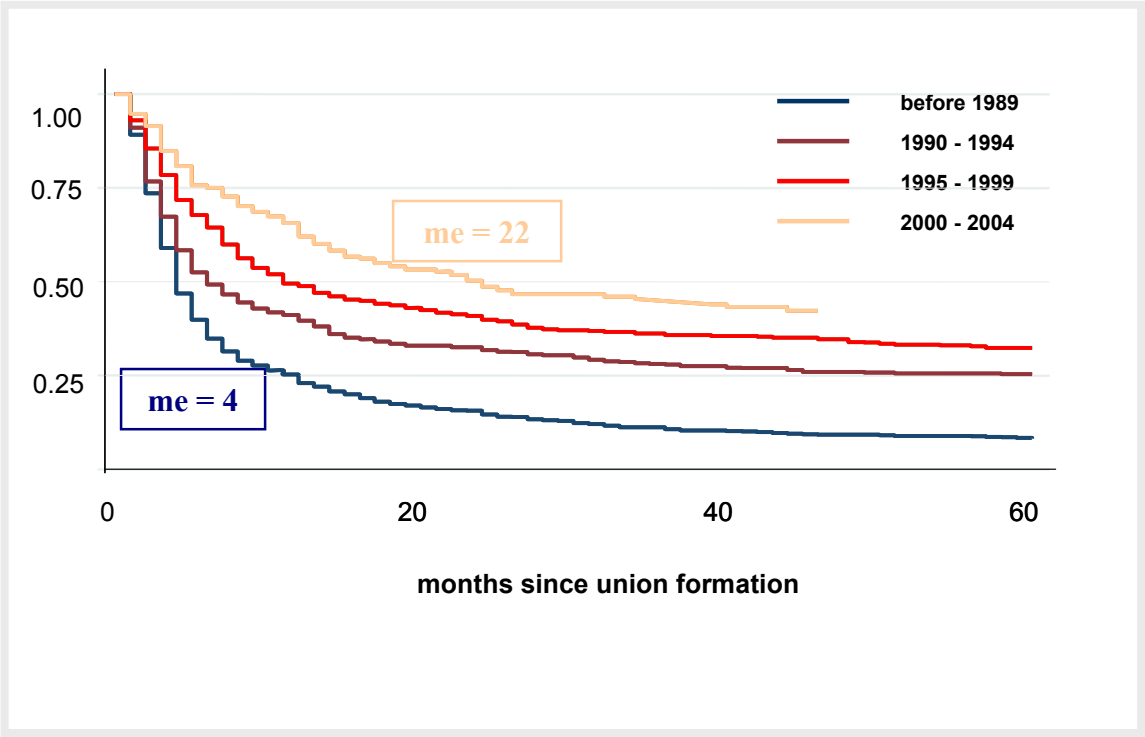

Figure 1

Kaplan-Meier estimation for transformation of cohabitation into a marriage by year of union formation

The raising share of cohabitation as a first union witness for emergence of a new family formation model in Bulgaria, therefore it does not give an answer to the question weather cohabitation is a stage in the courtship process which is postponing the marriage or it is rather a family form replacing the traditional marital family. The vast and simultaneous increase in

[4] For the Kaplan-Meier estimation living together without official marriage is considered cohabitation (also if there is less than four months between start of living together and marriage)

[5] highly associated with the time between engagement and official marriage

the *percentage* of non-marital births (to over 50% of all births in Bulgaria), suggests that part of the children who are born out of wedlock are born to couples in cohabitation. Thus, if we think about a union formation with children reared in such relationship, we can classify it as an alternative to the marital family.

To explore the issue of nature of cohabitation a bit more, we attach cohabitation to the birth of first child. Table 3 presents the first births by union status of the mother (sequence of the events in the woman's life trajectory).

Table 3

First birth by union status of the woman (women with children only)

(in %)

Cohorts *(age at the survey)*	*1955-59 (45-49)*	*1960-64 (40-44)*	*1965-69 (35-39)*	*1970-74 (30-34)*	*1975-79 (25-29)*	*1980-86 (18-24)*
Union status						
lone parenthood	8.5	5.0	5.7	5.1	6.9	9.3
cohabitation at first birth	6.1	6.3	8.8	12.8	26.7	49.3
cohabitation/conception/marriage/birth	4.4	6.5	7.9	8.3	14.2	8.8
conception/direct marriage/birth	11.4	13.1	15.4	15.5	15.0	10.7
direct marriage/conception/birth	69.6	69.1	62.2	58.3	37.2	22.0
N	342	779	706	760	506	205

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

While classifying the union status we distinguish between births in a cohabitation, direct marriage and marriage preceded by cohabitation. The shifts in the family status environment for having a child over generations[6] are outstanding. Two items are worth to be pointed out - the increase in the

[6] Although women in Bulgaria have first child much earlier than women in West European countries, we will not comment the cohort 1980-86, because of the very young age of the respondents.

births in cohabitation, and the increase in the marriages between conception and birth. For about 30% of all births in cohort 1975-79, marriage has happened after (has been forced by) conception and before the birth, while this percentage is 15% for the cohort 1955-59. Clearly the model for the cohorts born in 1950s and 1960s was direct marriage followed by conception, while in the younger cohorts marriage appear mainly after conception but clearly not all conceptions lead to marriage. Hence, despite of direct marriage loosing its importance as a first union formation, marital family is still preferred environment for rising children in Bulgaria. Looking at the results from another angle, we observe a considerable rise in the proportion of children born in cohabitation from mothers born in the late 1970s. This can be considered as a first sign for "institutionalization" of cohabitation as a part of the family sector (couples, who live together and have children).

2.2 Family formation – working hypotheses

As it was pointed already above, this study is focused on the development and the *meaning*[7] of cohabitation in Bulgaria. What is different in the profile of people who choose cohabitation vs. ones who marry directly? Is the cohabitation a long term commitment and if not, what is the next step after entering cohabitation[8]?

The situation in Bulgaria after the collapse of the political system in 1989, have been often described as a "times of economic hardship and impoverishment" where "affected people may decide to postpone and even

[7] *meaning* is used here trying to distinguish weather the cohabitation is: "**provisional**" – associated with a tolerance for a sexual and affective relationship but without long term project of common life and /or family; or "**long-term**" – where the partner is considered as an informal spouse and children are very often present in this kind of union, meaning cohabitation is a sort of "marriage without papers", (Martin and Thery, 2001)

[8] The original idea was to carry out an analysis on transition out of cohabitation (marriage or dissolution) in order to investigate the stability of the cohabitation. However, there were not enough cases to study dissolution (only 55 among the cohabiting women ended union in dissolution)

reject crucial and irreversible life events" (Philipov, 2002, p. 3). Given the difficulties that the Bulgarian society have experienced in the past 15 years and the dominant presumption that there is still "long way to go", we hypothesize that the marital institution was neglected giving a way to a new, less committing, less demanding and less future oriented union, like cohabitation. Therefore our *hypothesis 1* states that we expect increase over time of the risk of entering consensual union as a first union formation.

On the other hand in Bulgaria the traditional marital family had strong predominance[9] before 1989. Some studies (Belcheva, 2003,) state that in times of social discomfort and emotional anxiety, family is viewed as one of the most secure and trustworthy places, where one can find support and get countenance. Other authors (Dimitrova, 2005) have found that 15 years after the beginning of transition "the marriage is burdened with instrumental values which are subordinated to the ultimate value of parenthood". Therefore we expect that either because of better recognition from the society or because of the normative regulatory power, the marital institution is still preferred when the parenthood is involved. Therefore our *hypothesis 2* states that first conception would lead the couple to enter rather direct marriage as a first union, than cohabitation. Connected to the previous statements, we will formulate our *hypothesis 3* that conception in cohabitation will transform the partnership into a marriage (cohabitation seen as a last stage in a process leading to marriage).

3. Data, measures and method

The ***data*** is taken from Generations and Gender Survey (GGS) conducted in Bulgaria in November-December 2004. Originally it consists of 12886 interviews – 7024 women and 5862 men aged 18-85.

[9] Except for the ethnic group of Roma-Gypsis.

GGS questionnaire contains detailed retrospective question sequences on fertility and union formation histories and questions about respondent's social background such as ethnicity, region of residence in childhood and parent's education.

For the analysis sample is restricted only to female respondents, aged 18-49 at the time of the interview, Bulgarian ethnicity[10] only, with complete data on first birth and first union formation[11] (4025 women under the risk of entering first union – direct marriage or cohabitation and 993 women under the risk of transforming cohabitation into a marriage).

Some ***variables***, which will be used for the analysis, are time fixed (as "number of siblings", "residence at age of 15" "parent's highest educational level attained"), some of them were constructed as time-varying e.g. "educational enrolment", and "parity"; while "calendar year" will be presented by duration spline.

We run piece-wise linear intensity regression ***models*** for the transition to first cohabitation, first marriage and transformation of cohabitation into marriage. For the first two models observation starts at the 14th birthday of the respondent. Studying entry into first cohabitation the cases where marriage appears were censored at marriage formation (respectively for studying direct marriage observations were censored at forming cohabitation). Further more all cases were censored after 15 years of observation if no union was entered until the age 29. Time is measured in months and the mathematical representation of the models for transition to first union look like that:

[10] Our analysis is restricted to Bulgarian ethnicity only for two reasons. First, the ethnical group of Roma-Gypsis is known to have different family formation model than the other major ethnical groups in Bulgaria (Pamporov, 2003). Second, due to many missing values and answers "don't know" on the dates of first birth and first union formation.

[11] Further we excluded from the analysis women who experienced first union formation or first conception prior to age of 14.

$$\ln h_i^m(t) = y^m(t) + \sum_k \alpha_k^m x_{ik} + \sum_l \beta_l^m w_{il}(t) + spline(t+u_i)$$

$$\ln h_i^c(t) = y^c(t) + \sum_k \alpha_k^c x_{ik} + \sum_l \beta_l^c w_{il}(t) + spline(t+u_i) \left[+U_i\right]$$

For the third model, observation starts with the forming of cohabitation and continues until marriage occurs. Observations are censored at dissolution, or 5 years after forming the first cohabitation.

The model for transition to marriage after cohabitation has the following form:

$$\ln h_i^{m2}(t) = y^{m2}(t) + \sum_k \alpha_k^{m2} x_{ik} + \sum_l \beta_l^{m2} w_{il}(t) + spline(t+d_i) + spline(t+z_i) \left[+V_i\right]$$

where:

$\ln h_i(t)$ are the log-hazard rate of cohabitation, direct marriage or marriage after cohabitation (denoted with the superscripts *c, m* and *m*2);

$y(t)$ denote a piecewise linear baseline log-hazard intensity;

$\sum_k \alpha_k x_{ik}$ represent the fixed covariates;

$\sum_l \beta_l w_{il}(t)$ represent the time-varying covariates;

$spline(t+u_i)$ and $spline(t+d_i)$ represent a piecewise linear spline transformation of calendar time, where $(t+u_i)$ shows the time since age of 14 of the respondent and $(t+d_i)$ presents the time since entering the first cohabitation;

$spline(t+z_i)$ is a duration spline accounting for conception and childbirth, kicking in at the time z_i of the occurrence of first conception;

U_i, V_i are unobserved heterogeneity factors.

For the estimation, we use the statistical software aML, version 2.0 developed by Lillard and Panis (2003).

4. Results

4.1 Transition from being single to first union (cohabitation vs. direct marriage)

We would first like to draw the attention to the changes in the first union formation model over the calendar time. The results plotted on figure 1 show the swift transition in the family formation pattern in Bulgaria after 1989. The first marriage intensity had experienced a fall already for the period 1969-1985, followed by a short increase. Nevertheless, the slump experienced after the year of transition is much more rapid and powerful.

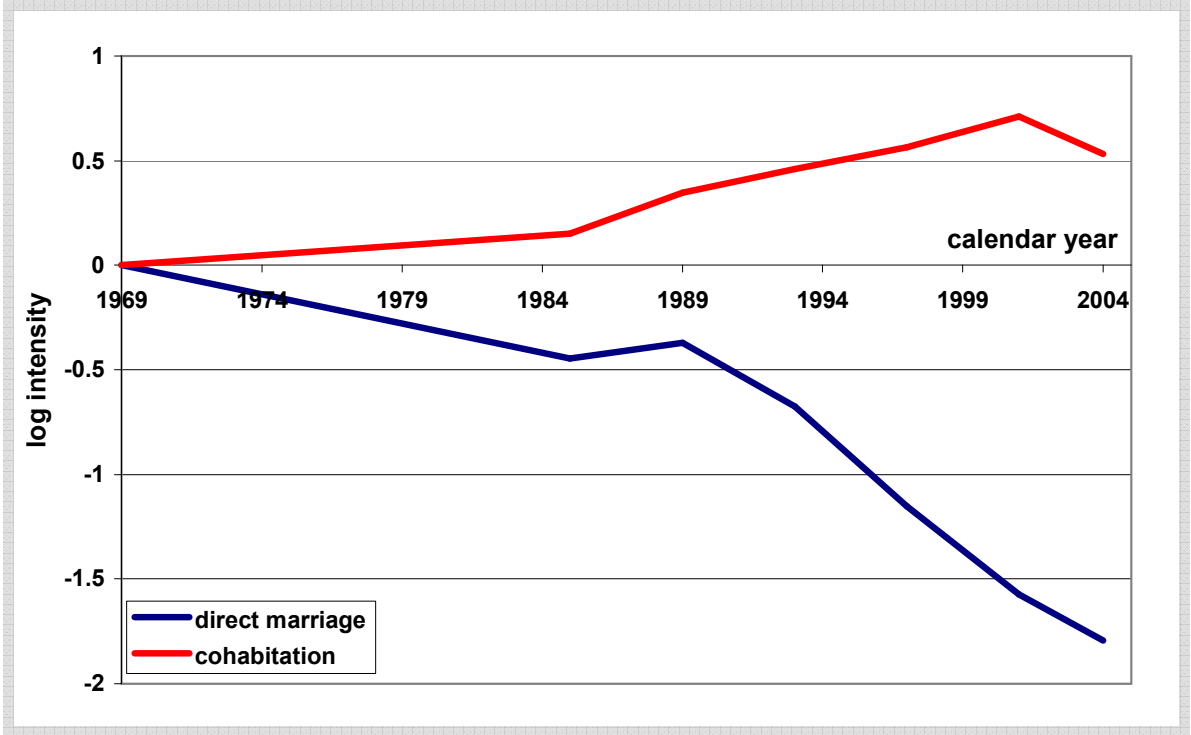

Figure 2

First union formation intensities by calendar year, standardized for the variables shown in Table 4

Simultaneously the intensity of entering cohabitation instead of marrying directly increases over time. The emergence of cohabitation as a first union formation is clearly visible in the late 1980s. A significant rise in the intensity of entering cohabitation as a first union is observed in the following

decade. However, the process seems to have slowed down in the first four years of the present decade.

Further discussion on the most interesting changes of the family formation determinants over the calendar time will be presented after a detailed discussion on what distinguish the cohabitation-prone women from those, who marry directly.

Table 4 presents the two final models for transition to first cohabitation and transition to first direct marriage, with all factors included in the models[12].

Type of the childhood settlement, social environment and family background have significant effect on the first union formation.

- *Family background.* The first significant divergence that should be pointed here is the effect of the parental family. Those of the respondents who experienced living with one of the biological parents only[13] (or none of them) are significantly more prone to form a cohabitation and less prone to marry directly. Personal experience of living in an incomplete family can be simply transformed in a weaker attachment to the nuclear family itself and acceptance[14] of other living arrangements. On the other hand we can also apply our result to Reher's concept (Reher, 2004) about weak and strong family ties[15] in Europe. Probably the relation is not so obvious however when we think in terms of 'strong family ties' societies, we say offspring are dependent on their parent's opinion or parents' approval of their decision to create family.

[12] The values showing up significance but in opposite directions are underlined.
[13] The question in the GGS questionnaire is formulated as follows "Have you lived with both biological parents before you completed 15?"
[14] Acceptance here refers both to a personal acceptance as well as parents' acceptance
[15] We do not have basis here to judge if in Bulgaria weak or strong family ties prevail, but we can argue that in the incomplete families it is more difficult to create strong ties between the family members.

Table 4

Relative risks of entering first union in Bulgaria[16]

	direct marriage		*cohabitation*	
region of residence at age of 15				
city	1		1	
village	1.11	**	1.24	***
parents lived together				
yes	1		1	
no	0.78	**	1.55	***
mother's highest level of education				
low	1.18	**	1.15	
middle	1		1	
high	0.86		1.10	
doesn't know	1.26		1.73	***
father's highest level of education				
low	0.89	**	1.28	**
middle	1		1	
high	0.76	***	0.99	
doesn't know	0.69	***	0.84	
number of siblings				
0 or 1	1		1	
2 and more	0.90	*	1.30	***
enrolment in education				
in education	1		1	
out of education	2.14	***	1.90	***
parity				
childless, not pregnant	1		1	
childless, pregnant	25.51	***	5.25	***
mother	0.86	***	0.58	***

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

[16] Calendar year effect shown on figure 2, baseline intensity, shown on figure 3.

By the same token we argue that family support matters in Bulgaria[17] when one makes an important step in his/her life career (like creating own family).

Another evidence for the effect of parental family interrelations on the individual's family formation pattern is the significant 73% higher risk of entering cohabitation for the women who do not know what their mother's completed level of education is. This is a very small group (around 3%) of women and probably there is not merit to comment on it, but it is still showing up in the direction of family ties and familial type of preferences which are formed in the respondents' childhood and influence their own vision of family model.

To continue with the parental family background, we can state that we got rather surprising results on the effect of parents' education on the first union formation behavior. If we control only for mother's education, respondents with low educated mothers have 40% higher risk of entering cohabitation as a first union than if the mother has finished secondary school or university (not shown here). When we add to the model variable for education of the father, the influence of the mother's education becomes insignificant. However having low educated fathers increase the risk of entering cohabitation as a first union with 28%. Our findings are contradicting with the presumption that the new ideas and trends are coming through the progressive-minded and highly educated people. Nevertheless if we think in terms of economic factors which may affect the process of family formation (1st wave of GGS survey does not provide time-series to test them), we can speculate that low educated parents have lower income and therefore they are less supportive to the idea of costly wedding ceremony for their offspring. Other researchers (Koytcheva, 2005) have found support to the negative association between the higher level of respondent's education and the risk of starting union in cohabitation instead of direct marriage in Bulgaria.

[17] Likewise Rosina and Fraboni (2004) in their study about Italy argue that a [negative] relationship between the strong family ties and the diffusion of cohabitation is apparent.

With the presumption that the effect of parents' education on entering first union (especially on entering cohabitation as a first union) is changing over the time we tried an interaction between variables on parents' education and calendar time.

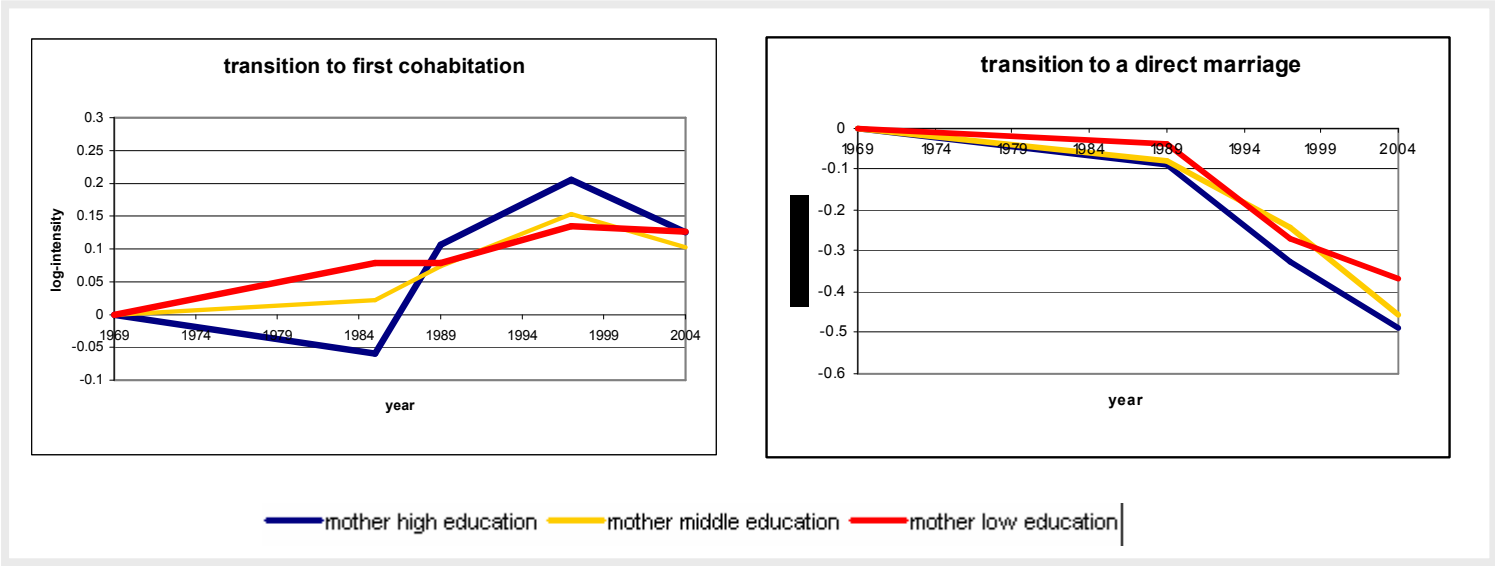

Figure 3

First union formation intensities by calendar year and mother's education, standardized for the variables shown in Table 4

We present (fig. 3) the changing effect of mother's education[18] on entering first union in Bulgaria. Before 1989 cohabitation was (as we already stated) more common among women with low educated mothers. Thus in post-transitional period we witness turnover indicating that cohabitation become more accepted and more spread among women with highly educated mothers.

To summarize the family background influence on first union formation, we will briefly discuss also the size of parental family.

[18] The effect of father's education on entering first union didn't change over the calendar time, probably because in Bulgaria changes in the female educational attainment over the last two decades are much more pronounced. We have also tried an interaction between mother's and father's education and its change over the time, which also witness for changing profile of women entering cohabitation as a first union in Bulgaria. (table shown in the appendix)

Respondents with two or more siblings are more prone to choose cohabitation instead of direct marriage. A reasonable explanation for that trend can be found in the economic aspect of the marriage.

- *Educational enrolment.* Women's educational attainment and educational enrolment are well known factors for postponing major life-time events, such as the studied here process of family formation. In our model we could build only "enrolment in education" variable[19], because of the questionnaire design of the 1st wave of GGS survey. We are aware that we need to assess[20] the results very carefully and underline that anticipation may be ongoing in some cases who create the first union after graduating from the secondary school and before starting university. Thus the interpretation on the effect of the educational enrolment is under the consideration that people do not interrupt the process of education.

Being in education have a strong negative effect on the union formation (valid for both cohabitation and direct marriage), which agree with plenty of already published studies on the topic. Yet, the school attendance has stronger effect on the marriage formation, since cohabitation is considered as less committing and more liberal union.

- *Effect of pregnancy.* The last row in table 4 is devoted to a very essential variable - of pregnancy and its effect on couple's decision to form a union. Pregnancy effect on union formation is showing up in the expected direction. The risk of transforming a relationship into a marriage after becoming aware of the pregnancy is 25 times higher compared to the reference category - childless, non-pregnant woman. On the other hand, the risk of entering

[19] The only question on respondents' educational history in the GGS survey - first wave is "When did you finish your highest level of education" (month and year). Regarding that restrictions, the variable included in the model is create as a time-varying covariate, where the respondent is considered as "in education" before that date and "out of education" after that date.

[20] A good point is the almost universal 12 years of compulsory secondary education in Bulgaria. Another helpful point was the additional question on "how many years you have spent in education" which was useful while creating the variable.

cohabitation when the couple expects a child is again much higher than if the woman is not pregnant. Hence, we can state that traditional marital family is still preferred family environment for bearing a child and as soon as the couple realizes they expect a child, marriage is much more common union formation.

- *Effect of age*. The baseline log-intensities for entering the first union are presented on figure 2. The age patterns for forming cohabitation or marry directly are rather similar. Yet, we can argue that the intensity of entering cohabitation has clearer peaks at the earlier ages and afterwards it is more equally distributed over the life time while marriage is more concentrated at the ages 18 – 26.

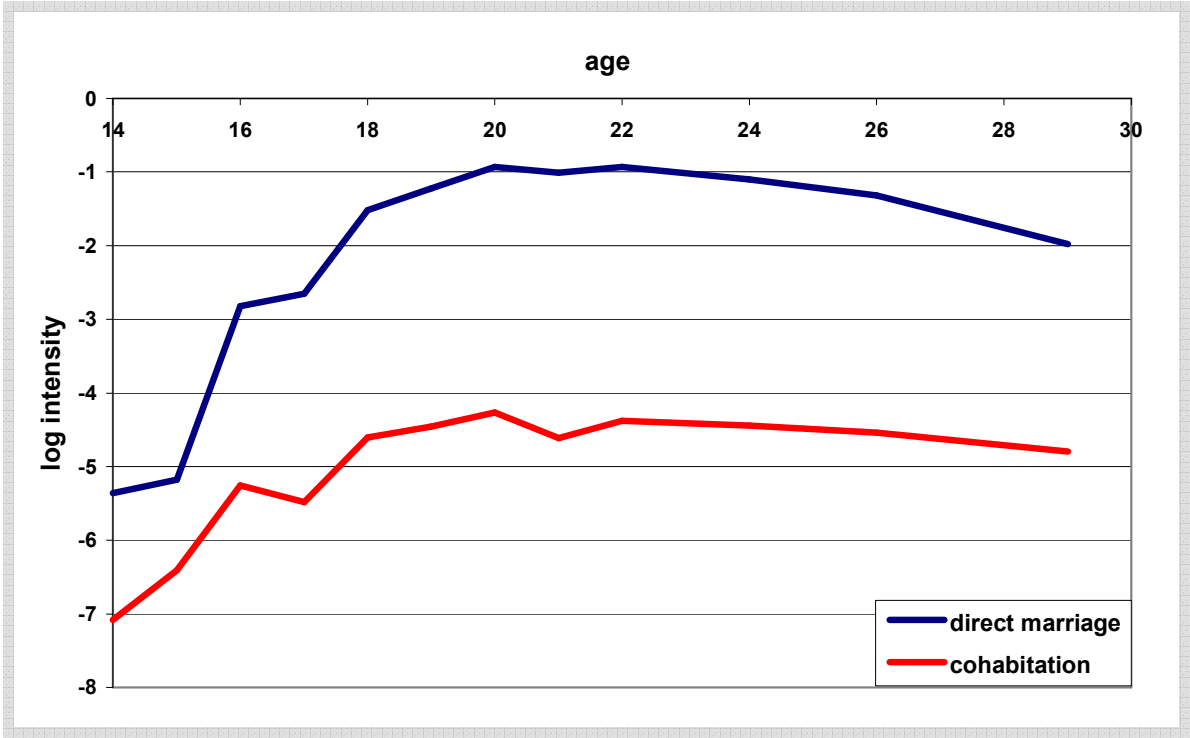

Figure 4

Piecewise-linear baseline intensity for transition to first union, standardized for the variables shown in Table 4.

4.2 Transformation the cohabitation into a marriage

As it was pointed already above the aim of this mini-project is to study development of cohabitation in Bulgaria. Studying the transition out of cohabitation (until it transforms into a marriage or it finishes with dissolution) would allow us to make the cohabitation model clearer. In table 5 we present the descriptive statistics of transition out of first cohabitation.

Table 5

Transition out of first cohabitation

	marriage	*dissolution*	*still in cohabitation*	**total**
all cohabitors	711	71	211	993
	72 %	7 %	21 %	100 %

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

It is clear that the biggest percentage of cohabitations ends in a subsequent marriage (more than 70% of all cohabiting women transform cohabitation into a marriage within the first five years after entering the cohabitation). About one fifth of the cohabiting women are still in the same relationship at the end of our observation[21]. Apparently that there are not enough cases to model transition to dissolution. Thus we can probably speculate that the first cohabitation in Bulgaria is rather stable union, which either transform into a marriage or stay as a cohabitation.

- *Calendar year effect.* As shown on figure 3, the intensity of transformation the cohabitation into marriage is decreasing over time. It is not so rapid and dramatically like the decline in transition to a direct marriage, but still it adds to the general trend of neglecting the marital family.

[21] Observation ends five years after forming the first cohabitation or at the interview

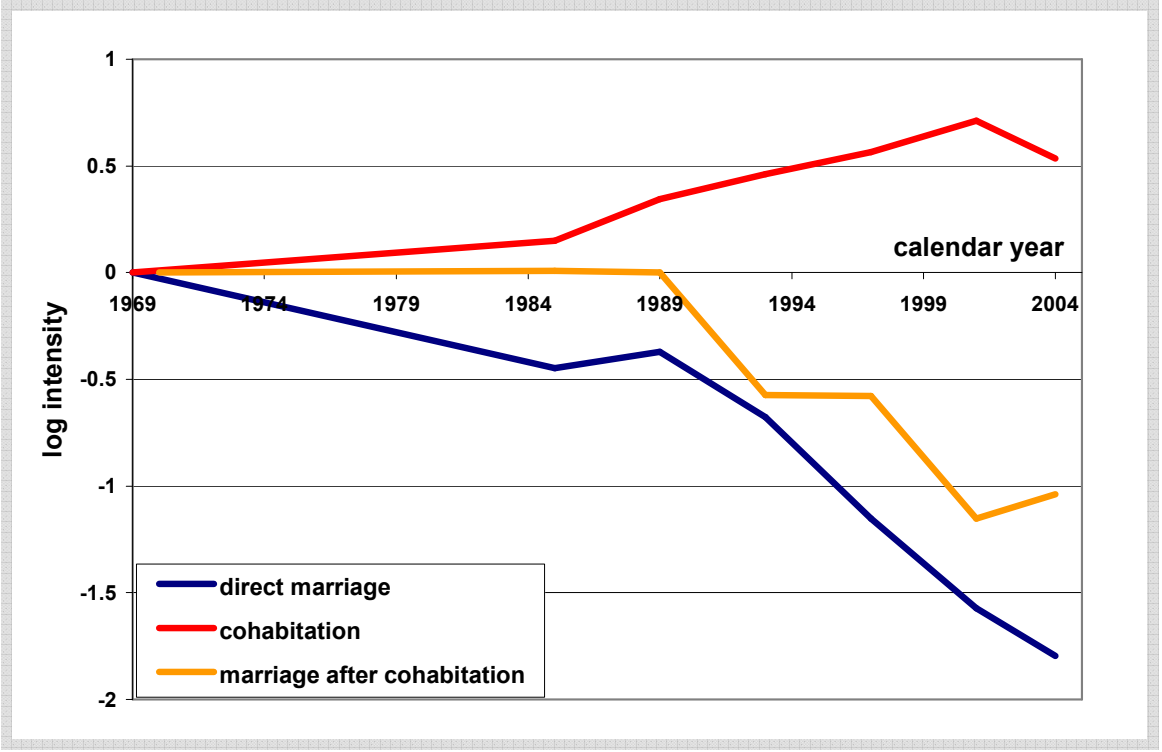

Figure 5

Union formation intensities by calendar year

- *Family background.* Table 6 demonstrates the family background diversity of effect for the respondents in the transition to marriage after cohabitation and although some of them are not statistically significant they indicate the effect of the parental family on the individual's family formation pattern. Here we study transition to marriage and even though it is among the women who had chosen cohabitation as a first union formation, the results witness for some similarities with the women who marry directly. There is evidence that marital family is preferred by the respondents who have spent their childhood with both parents. Bigger parental family size effect in lower risk of transforming cohabitation into a marriage (even stronger than for direct marriage). And contrary to cohabitation prone respondents, those with lower educated mothers are least affiliated to the marriage (23% lower risk to transform cohabitation into a marriage than those with middle or higher educated mothers).

Table 6

Relative risks of transforming cohabitation into a marriage in Bulgaria[22]

	marriage after cohabitation	
region of residence at age of 15		
city	1	
village	1.02	
parents lived together		
yes	1	
no	0.87	
mother's highest level of education		
low	0.77	**
middle	1	
high	1.01	
doesn't know	1.02	
father's highest level of education		
low	1.05	
middle	1	
high	0.93	
doesn't know	0.89	
number of siblings		
0 or 1	1	
2 and more	0.76	***
enrolment in education		
in education	1	
out of education	1.23	**
parity		
childless, not pregnant	1	
childless, pregnant	2.94	***
mother	0.63	***

- *Educational enrolment.* The effect of educational enrolment (table 6) appeared to be significant after introducing the calendar time spline, but not in a model without the calendar time variable. A possible explanation could

[22] Calendar year effect shown on figure 3, baseline intensity, shown on figure 4.

be the compositional changes in the population during the transitional period – increase of the percentage of the women in tertiary education after 1989 as well as increase of the proportion of cohabiting women. Another possible explanation could be that that the effect of education variable is different over time. Thus we decided to make an interaction between educational enrolment and the time-varying covariate "calendar time" with two levels only – "before 1989" and "after 1989". Results shown in table 7 suggest that enrolment in education was negatively associated with transition to marriage after cohabitation, i.e. being in education was an obstacle for transforming the cohabitation into a marriage, before 1989. However after the year of transition, being in education appeared not to be a barrier for the couples who decided to transform their partnership into a marriage.

Table 7

Interaction effect of *enrolment in education* * *calendar time* on transforming cohabitation into marriage

calendar time	*before 1989*	*after 1989*
enrolment in education		
in education	1	1.15
out of education	1.20	1.05

Source: own calculations, based on GGS data (2004)

(Bulgarian women, Bulgarian ethnicity)

- *The effect of pregnancy*[23] *and childbirth.* As we discussed above pregnancy has strong positive effect on transformation of being single into direct marriage. Here (figure 4) we plot the effect of pregnancy on the intensity to transform cohabitation into a marriage as a kick-in spline function, which is to show the effect of pregnancy if the pregnancy appear one year after the

[23] The time of getting pregnant is calculated as subtracting nine months from the date of the birth of first child.

couple start living together. We see an increase of the risk of marriage during the first six months of the pregnancy and then when a child is already present in the union, the risk of transforming cohabitation into a marriage is becoming lower.

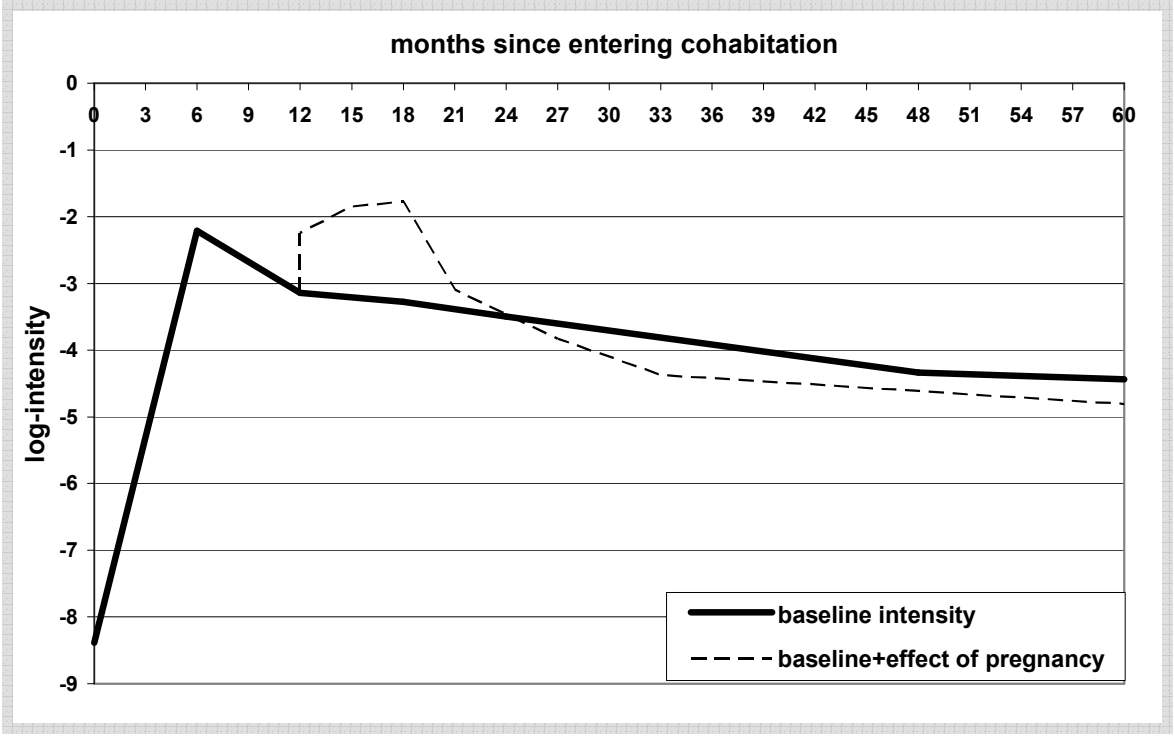

Figure 6

Piecewise-linear baseline intensity for transition to marriage after cohabitation[24]

4.3 To account for the selectivity in the process

In the following we would like to elaborate on some more complex models accounting for the possible presence of unobserved heterogeneity[25]. After the basic modeling of the three processes, we model transformation of cohabitation into a marriage introducing an unobserved

[24] Because of the data set up, during the first four months marriage risk is zero.

[25] Further on in this section we will not comment on every variable included in the new model, but only on some changes which came out from introducing unobserved heterogeneity factor.

heterogeneity factor[26] (V_i on the graphs below) in order to control for the selection effects.

- *Introducing unobserved heterogeneity factor to the model of marriage after cohabitation*

On figure 5 we plot the baseline intensities for transforming cohabitation into marriage within the first five years after entering the cohabitation (models with and without unobserved heterogeneity factor). The thick line presents the intensity to transform cohabitation into marriage without accounting for the selection effect. We can state that cohabiting women are under higher risk to marry one year after entering cohabitation and the risk decreases with duration of cohabitation.

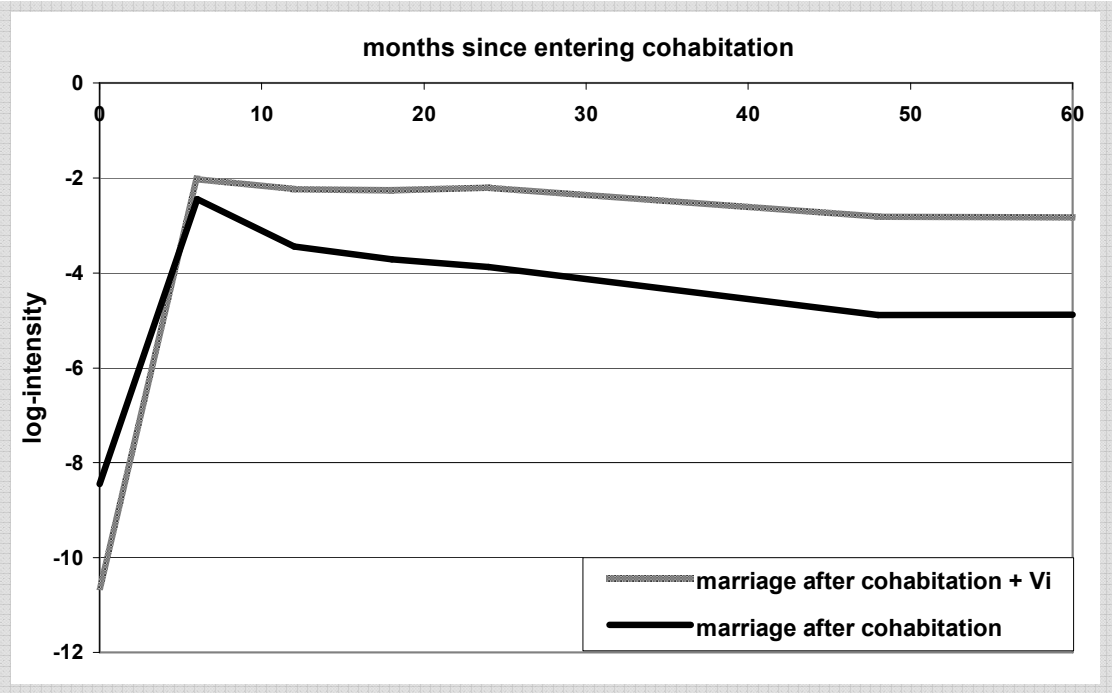

Figure 7

Piecewise-linear baseline intensity for transition to marriage after cohabitation

[26] Results are shown in Table A in the Appendix

With introducing the unobserved heterogeneity factor to the model, we control for the proneness to the marital family, therefore we can say that the decrease of the intensity to marry with the increase of the union duration is due to heterogeneity of the group. The ones who are more prone to marry, they do it in the first years after they start cohabiting. After we control for the exit selection and aptitude to familizm and marriage, the intensity to transform cohabitation into marriage stays more or less constant over the cohabitational duration.

- *Multiprocess model for cohabitation and marriage after cohabitation*

Modeling simultaneously transition to cohabitation and transformation of cohabitation into a marriage would allow us to control for so-called "entry selection". Women who did not marry directly, but decide to cohabit instead might be a selective group of people who are more individualistic (non-family) oriented. However the ones among them who marry afterwards might be part of a selective group of people who have the same orientation towards the marital family as the ones who marry directly. Our operational plan was to account for the family background and social environment influencing women's decision to form a union. Many authors argue that increase in cohabiting unions can be regarded as a sign for rising individualization and emancipation. Studying cohabitation and non-marital births in West Germany and France, Le Goff (2002) refers to the notion of pluralization[27] of family formation vs. polarization hypothesis. Therefore a "polarization hypothesis" was used to appoint two different types of behavior among the couples – a so-called "family oriented couples" (who marry and have children) opposed by "non-family sector" (singles or dual careers couples without children) (Ostner, 2001). Slightly transforming this framework into "traditional family (or marriage) oriented couples" and "non-marriage sector", we decided to introduce heterogeneity components

[27] *pluralization* of family formation denotes that marriage and marriage-based families has become eligible living forms among many others (Ostner, 2001).

(respectively for the processes of forming cohabitation and for subsequent marriage) which would capture the effect of unobserved characteristics of the women (values about marital family for example). We assume that the two factors will be negatively correlated, as they account for the differences in the values toward family in two contrasting family formation processes.

Table 8

Unobserved heterogeneity factors and correlation

cohabitation (U_i)	1.41***
subsequent marriage(V_i)	1.80***
correlation	-0.50***

As table 8 presents, the values for the unobserved heterogeneity factors are negatively correlated and highly significant.

- *Calendar year effect* .When discussing the effect of calendar time on transition to marriage after cohabitation we stated that decrease over time is not as dramatic as for transition to a direct marriage. The effect of calendar time in the model, where we control for the selection effect, shows up with a stronger effect instead (figure 6). An even stronger decline in the marriage rates is observed when we control for the entry selection (cohabiting population is becoming a less selected group over time) by joint modeling of cohabitation and subsequent marriage. Apparently we obtain more precise image of the development of the marriage intensities of the cohabiting women over the calendar time.

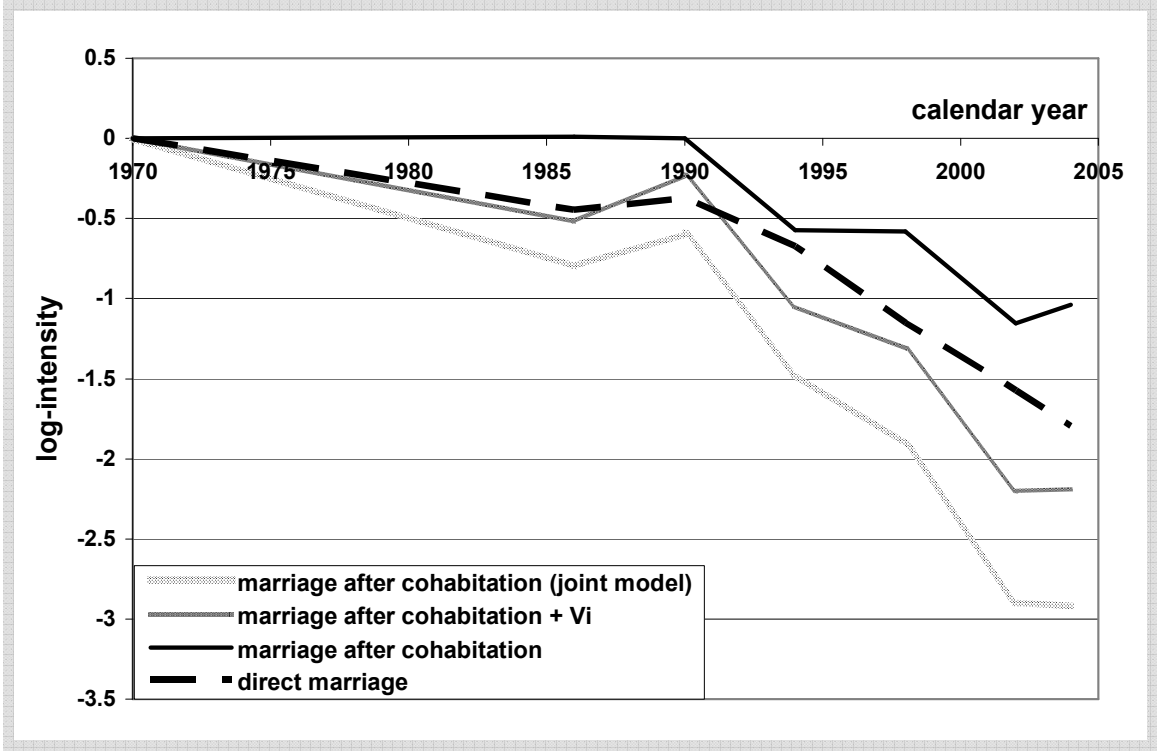

Figure 8

First marriage intensities by calendar year

5. Summary and conclusions

At the end of 1980s Bulgaria faced transition from one political regime to another, which was followed by dramatic changes in all spheres of life – political, cultural, economical, institutional etc. With this mini-project we highlighted the changes in the family formation pattern in Bulgaria after 1989. GGS data (tables 1-3) provided evidence that marital family has lost its universality in Bulgaria and a new family formation has emerged.

The aim of the study was to investigate weather cohabitation as a new union formation has the meaning of last stage of a courtship process, followed by marriage or it is rather alternative to the marital family. From the multivariate analysis we have found evidence that the intensity to form a cohabitation is increasing over the calendar year as well as over the cohort. More and more young women start their partnership careers in cohabitation

instead of direct marriage. The biggest part of them are however transforming their consensual union into marriage within the next five years.

Family and social background play an important role in the decision making process in terms of family formation. Contrary to our expectation cohabitation is more spread among the women with low educated parents and many siblings. This could be a sign that this new family form is preferred because it is less costly than the wedding. Thus a finding that deserve to be mentioned here is the changing effect of mother's education over the calendar time.

Regarding our hypotheses 2 and 3, we have found a proof that the traditional marital family is still preferred family environment for bearing children (conception transforms the partnership rather into a marriage than into cohabitation).

The design of the dataset did not allow us to introduce also economic factors in the model though as a next step we can bring in some macro-economic factors[28] (like national level time-series of GDP per capita, level of unemployment etc.) to account for the differences in the economic conditions over time in Bulgaria. From the models which account for unobserved heterogeneity we can draw the conclusion that the population is heterogeneous in terms of preferences toward the family formation and forms.

[28] Contextual database as a part of Gender and Generations Program can offer such time series for Bulgaria.

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Appendix

Table A
Transformation of cohabitation into a marriage

	marriage after cohabitation		*marriage after cohabitation + V_i*		*joint model*			
					marriage after cohabitation		*cohabitation*	
slopes (in log-form)								
Time								
constant	-8.10	***	-10.62	***	-10.25	***	-8.04	***
- 6 months	1.01	***	1.43	***	1.56	***		
6-12 months	-0.16	***	-0.04		-0.01			
12-18 months	-0.04		-0.00		-0.01			
18-24 months	-0.03		0.01		-0.00			
24-48 months	-0.04	***	-0.03	*	-0.02			
48-60 months	-0.00		-0.00		-0.00			
Age								
14-15							0.055	
15-16							0.102	***
16-17							-0.011	
17-18							0.082	***
18-19							0.024	
19-20							0.028	*
20-21							-0.018	
21-22							0.024	
22-24							0.004	
24-26							0.001	
26-29							-0.002	
Calendar year								
-1985	0.0002		0.003		-0.004		0.0009	
1985-1989	0.0001		0.006		0.004		0.0034	
1989-1993	-0.0101	**	-0.017	***	-0.018	**	0.0046	
1993-1997	-0.0014		-0.005		-0.009		0.0025	
1997-2001	-0.0110	**	-0.018	***	-0.021	***	0.0048	
2001-2004	0.0028		0.001		0.002		-0.0160	***
relative risks								
Region of residence								
city	1		1		1		1	
village	1.02		0.95		0.87		1.35	***
Live with both parents								
no	1		1		1		1	
yes	1.15		1.27		1.37		0.52	***
Mother's education								
low	0.77	**	0.63	**	0.59	**	1.35	**
middle	1		1		1		1	
high	1.01		0.88		0.79		1.05	
don't know	1.02		0.79		0.80		2.57	***
Father's education								
low	1.05		1.14		1.06		1.40	**
middle	1		1		1		1	
high	0.93		0.84		0.86		0.96	
don't know	0.89		0.80		0.77		0.79	
# of siblings								
0 or 1	1		1		1		1	
2 or more	0.76	***	0.66	***	0.60	***	1.49	***
Enrolment in education								
in education	1		1		1		1	
out of education	1.23	**	1.58	***	1.42	**	2.05	***
Parity								
childless, non pregnant	1		1		1		1	
childless, pregnant	2.94	***	4.61	***	4.75	***	5.95	***
mother	0.63	***	0.98		0.92		0.73	***
Sigma (V_i)			1.47	***	1.80	***		
Sigma (U_i)							1.41	***

Correlation (ρ)			-0.50***