Cross-national variations in birth control of Europeans: divergence or convergence?

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Introduction

Over the past decades, the gradual transition towards childbearing at a later age has been one of the most characteristic features of demographic change in Europe (Kohler et al. 2002). This ongoing postponement of procreation has narrowed the time period during which reproduction is possible, and, at the same time, prolonged the period before first childbearing, when effective contraception is necessary. Delayed childbearing has been facilitated by both the increasing prevalence and greater effectiveness of contraception. On the other hand, this trend towards later motherhood has made safe and effective birth control much more relevant.

The principal means of preventing conception and birth are contraception and induced abortions (Frejka 2008). Investigation of the relationship between levels of contraceptive use, the incidence of induced abortion, and fertility level has been a subject of many studies (Bongaarts and Westoff 2003, Marston and Cleland 2003, Westoff et al 1987). However, findings have not been consistent as increased contraceptive use need not necessarily lead to lower abortion rates. Marston and Cleland (2003) demonstrated that the key role of mediating factor usually plays the fertility level. When a fertility level in population falls rapidly, increase in contraception prevalence may occur without significant decrease in abortion. That may occur as only increased contraceptive use by itself is unable to meet the growing need for fertility regulation. The aim of the paper is to study the relationship between the changes in abortion and contraceptive behaviour in EU countries in the last two decades. In Eastern Europe both decrease in fertility and abortion rates were registered in the 1990s.

In the late 1980s the East–West division by birth control was identified in Europe as both parts differed by contraceptive practices and abortion rates (Blayo 1991, Macura et al. 2001). "Abortion culture" was the term used to characterize the nature of birth regulating behaviour in the formerly socialist countries of Central and Eastern Europe up to the end of the 1980s (Stloukal 1999). Liberal abortion legislation made induced abortions easily accessible as well as socially acceptable. Modern contraceptives were less available and most couples relied on traditional methods. For most countries women had an average of one to two lifetime abortions. In Soviet Union and Romania the average number of abortion per a woman was

even higher. In Western Europe modern contraceptives were widely available. Registered abortion rates in Western European countries were significantly lower than in Eastern European countries. Liberalization of abortion law did not predate the spread of modern contraceptives in Western Europe as it was the case in most former communist countries in Eastern Europe. Characteristics of women who had induced abortions differed sharply between the countries of Eastern and Western Europe (Blayo 1991). In the Eastern European countries induced abortion was used to limit family size once certain parity had been reached; thus induced abortion was the most frequently requested by married women with two or more children. In Western European countries most women who had induced abortions were young, childless and unmarried.

Before 1990 the east-west differences in Europe were apparent not only in birth control methods but also in fertility patterns. In Western Europe large-scale changes in childbearing were under way. Modern contraceptives were instrumental in childbearing postponement and fertility decline. However, liberal abortion legislation and modern contraceptives were not considered to be a principal cause of low fertility (van de Kaa 2001). In Eastern Europe parenthood started earlier than in Western Europe before 1990. Two children was the preferred number for the parents. Since 1990 a profound transformation of the reproductive behaviour has occurred in Eastern Europe. The incidence of induced abortions in Eastern European countries rapidly decreased although with different intensity. In the 1990s political and socio-economic transformation in Eastern Europe varied across the countries. Before 1990 Eastern Europe itself was not a homogenous region, however it grew even more diverse in the 1990s. The 1990s are regarded as the period of major discontinuities and a growing differentiation in EE (Macura et al. 2001). Widening of EU and further integration of Europe was expected to play important role also in demographic convergence.

Research question:

> *Despite the abortion decline in Eastern Europe since the early 1990s has the East-West division remained, or has the new one emerged? If new diversity has developed can we distinguish different patterns of abortion behaviour?What was the role of birth control method in shaping new reproduction patterns in Eastern European countries?*

Data and methods

Reliable national and international data sources in birth control methods were used. The international databases referred to included Eurostat, WHO-HFA, national statistic, GGS, The Reproductive Health Report 2011. Legislation related to abortion differs across the 27 EU Member States. Recently legislation has changed in Spain (since 2010 induced abortion at woman´s request is allowed up to 14 weeks´ gestation, i.e. two weeks more than previously. Since 2007 legal abortion became available on request until 10 completed weeks´ gestation in Portugal. In Estonia parental consent became a requirement for abortion induced below the age of 18 years. Only 21 out EU countries with liberal legislation and available data on abortions were selected. Ireland, Malta, and Poland were not included into analysis due to restrictive legislation. Austria, Cyprus, and Luxembourg were not included as no national or international data on abortions were available. Other cross country differences in legislation should be taken into account when making comparison. The time limit for an induced abortion on request is 10-14 weeks of gestation in most EU Member States, but higher in Sweden (18 weeks) and UK (24 weeks). Countries have different polices and practices with regard to the time limit for induced abortion for a foetal or maternal indication. Parental authorization for induced abortion of women under the age of 18 years is required in 11 countries under study: Czech Republic, Denmark, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Portugal, Sweden, and Slovakia. Finally, reporting completeness of available data, defined as covering at least 80% of all legal abortions (Sedgh et al. 2007), was assessed. Higher risk of under-reporting could be found in Romania, Greece, and Spain. It relates particularly abortions performed in private clinics or abortions among migrants. Some national statistics may not include medical abortions. Medical abortion is not allowed in five Eastern European countries under study: Czech Republic, Hungary, Lithuania, Romania, and Slovakia.

Comparative analysis included both the changes in the level and structure of induced abortions, and changes in contraceptive practice. Demographic analysis was based on available data from national statistics and abortion statistics provided by EUROSTAT, WHO-HFA, UN (World Contraceptive Use 2011), and The Reproductive Health Report 2011. General abortion rate is defined as number of legally induced abortion per 1000 women aged 15-49. Abortion ratio was calculated as induced abortion per 100 live births. Age-specific induced abortion rate is defined as number of induced abortion of women per 1000 women of given age group. Total induced abortion rate is the average number of induced abortions per woman during her lifetime if she were to pass through all her child-bearing years conforming

to the age-specific induced abortion rate of a given year. Total fertility rate is the average number of children per woman during her lifetime if she were to pass through all her child-bearing years conforming to the age-specific fertility rate of a given year. Contraceptive prevalence rate is defined as the percentage of women in reproductive age (15-49 years) or their partners who were using a contraceptive method at a particular point in time. The analysis of relationship between contraception and abortion was based on data that was obtained for 18 European countries from online databases of Eurostat as regards abortions and from UN (World contraceptive use) as regards prevalence of modern contraceptive use (percentage using contraception among women who are married or in a union, modern method: sterilization, pills, injectable, implant, IUD, male condom, vaginal barrier method.

Cluster analysis of birth control indicators was used to give more detailed insight into current typology of use of birth control methods in the EU. The following five indicators were included into cluster analysis: general abortion rate in 2009, contraceptive prevalence rate of modern methods (latest available data), percentage of pregnancies ended with an abortion among women aged 15-19 years in 2009, share of abortion rates in age group 20-24 to 25-29 years in 2009, abortions per 100 live births of women aged 35-44 in 2009.

Finally, data from the first wave of Generation and Gender Survey (GGS) were analysed as they provide more information about contraceptive behaviour in selected three countries: The Czech Republic (2005), France (2005) and Bulgaria (2004). A three-stage random sampling (cluster sample) was utilised in all surveys in order to obtain results that are representative, even for small territorial areas. Data were gathered through face-to-face questioning. The core question, investigating current use of contraceptive methods was "Are you doing or using anything to prevent pregnancy?". For the purpose of comparison, only data concerning women of reproductive age (18-44), were included in the analysis. Furthermore, the analysis was restricted to women of reproductive age, who had a partner – whether cohabiting or not – at the time of the interview. Therefore, the total number of women aged 18 to 44, eligible for analysis was 2334 in the Czech Re public, 1634 in France and 556 in Bulgaria.

We utilised SPSS version 20 to analyse the data and, more specifically, to compare the percentage distributions of female respondents by contraceptive status. In the event that respondents reported multiple contraceptive methods, only the most effective method was taken into account. The traditional and less effective methods cited in the analysis included

withdrawal and periodic abstinence. The pills, IUDs, and condoms were all considered to be effective contraceptives. However, when applying multivariate statistical analysis to identify differences in use of modern contraceptives by individual characteristics, only the pills and IUDs were included into calculations. Adjusted odds ratios were used to assess predictors for the use of the modern contraceptives. We applied binary logistic regression to adjust for potential confounding factors. Age, type of partnership, number of children, and education, were included as independent variables, while the use or non-use of pill or IUD was the dependent binary variable.

Results

Cross-national variations in abortion level have been reduced by 2009 (see Figure 1) as most Eastern European countries registered decline in abortion rates between 1989 and 2009. The lowest general abortion rate (7 abortions per 1000 women in 2009) within this region was reached in Slovakia (Figure 2). Slovakia together with Czech Republic, Slovenia and Lithuania reached levels even lower than those registered in Sweden and France. Thus, a group of four countries that were formerly a part of Eastern Europe has been separated.

As the decline of total fertility rate was registered at the same time, the increase in contraceptive prevalence in those countries can be expected. Therefore, relationship between the incidence of abortion and contraceptive prevalence was analyzed. Figure 3 shows a plot of abortion ratio and prevalence of modern contraceptive use. The least-squares regression line shows the expected inverse relationship between prevalence of modern contraceptive use and the abortion ratio, i.e. the higher prevalence of modern contraceptive use, the lower abortion ratio. When prevalence of modern method use is around 60%, the abortion ratio is less than 40 abortions per 100 live births (the case of the Czech Republic). On the other side when prevalence of modern method use is low as in Bulgaria (25%)

Following the introduction of a liberal abortion law in 1957 in the Czech Republic, the total abortion rate increased abruptly and, eventually, settled at around 1.0 abortion per woman, throughout the 1960s and 1970s. In 1962 and 1973, restrictions resulted in only a modest decline in the incidence of legal abortions and, within two or three years, the TAR regained its pre-restriction level. The conditions and enforcement of abortion legislation appear to have been a determining factor in whether or not the birth of an unplanned child occurred. Records

kept by the Institute of Health Information and Statistics of the Czech Republic (UZIS CR), describing all contraceptives prescribed since 1970, show a slight increase in the percentage of women of reproductive age using an IUD or the pill, during the 1970s (Figure 4). However, this temporal increase in contraceptive use was not accompanied by a parallel decrease in the abortion rate.

The incidence of abortions significantly rose after 1987, when the final measures of liberalisation of abortion were implemented, abolishing the special committees set up in 1957, that had to approve each request for an abortion. Moreover, this law decreed that contraceptives be provided free of charge. The additional increase in TAR was associated with a decrease in the proportion of women using an IUD or the pill, which fell to 17% in 1991 (Figure 4). The adoption of a more liberal law led to an undesirable decrease in the use of effective family planning (FP) methods. Apparently the cost of modern contraceptives was not a primary reason behind their previous low usage rates as providing them free of charge did not stimulate women to use them more. Most women refused to use hormonal contraceptives for fear of side effects or due to more general health concerns. Mass media played a negative role as possible side effects were exaggerated by emphasising particular cases with complications. Eastern European variants of hormonal contraception elicited indeed more side effects than brands produced in Western countries. Women's attitudes were also negatively influenced by certain Czech gynaecologists, who were, at that time, not convinced of the appropriateness of long-term use of the pill. Medical professionals often insisted that the prescription be preceded by an extensive set of clinical and laboratory examinations.

Since the beginning of the 1990s the number of abortions rapidly decreased and the TAR fell from 1.58 in 1988 to 0.34 in 2008. This means that, currently, only one third of all women undergo an abortion during their reproductive lifetime, while in 1988 the TAR indicated that, on average, every woman experienced 1.6 abortions during her reproductive years. The recent transition of abortion behaviour in the Czech Republic has been closely tied to changes in contraceptive use. Interestingly, a sharp increase in the share of women using prescription contraceptives was registered in 1993, the same year that contraception ceased to be provided free of charge. The notable increase in the fee for an abortion for non-medical reasons likely provided a strong incentive for a substantial change in contraceptive practice. According to the UZIS register, currently around 54% of women of reproductive age use the pill or an IUD.

Until the mid-1980s, the TFR and TAR acted as ‘mirror images’ with an increase in one being reflected in a decrease in the other (Figure 5). Since the beginning of the 1990s both trends in TFR and TAR became independent. The sharp decrease in TAR occurred within the same period in parallel to the profound drop in fertility. Childbearing started to be significantly postponed.

The different trends could be identified in Romania in the Figure 6. Romania is well known for the very dramatic swings in its abortion policies. After abortion ban in the period 1966-1989 liberalization was introduced in 1990 which immediately resulted in an enormous increase in abortion rate. Until 1990 the reproductive behaviour of Romanian women was characterized by a lack of modern contraceptive use or family planning programmes as they were prohibited by the socialist regime. Illegal induced abortions and traditional contraception were the only ways of controlling fertility. After 1990 abortion was legalized and family planning programmes began to emerge. Although important changes in the availability and types of contraceptive methods took place, the high prevalence of traditional method of contraception continued in the 1990s. As a result the decline in total fertility rate was at first accompanied by an increase in total abortion rate and only lately followed by its decline.

Cluster analysis based on birth control indicators in 2009 revealed the existence of three clusters of countries. The first one consists of Denmark, Sweden, Finland, UK, France, Hungary, and Spain. The second one consists of Italy, Belgium, Germany, Lithuania, Slovenia, Slovakia, and the Czech Republic. Finally, the third one consists of Bulgaria, Romani, Estonia, and Latvia, i.e. the Eastern European countries. Looking at those clusters in more detail three patterns of abortion behaviour in EU countries can be identified (see Figure 7). France could be taken as the representative of the “early abortion pattern,” characterised by high abortion rate among women younger than 25 years and particularly among teenage women (see Figure 8). Although the highest percentage of women using pills was found in France (see Figure 9), it is connected with the highest propensity to end an unwanted pregnancy among teenage woman, suggesting the increase in demand for fertility control is due to a delay in fertility. Bulgaria was found to be the representative of the “late abortion pattern,” where women aged 20 to 34 years accounted for the highest frequency of abortions. Behind the high abortion rate are the low improvements in contraceptive practice, as only 40% of Bulgarian women of reproductive age use modern methods of birth control. While the

first two patterns confirm the continuation of the former "Western" and "Eastern" models, the third one has emerged recently as a result of increased use of effective contraceptive methods. The Czech Republic could be taken as a representative of this "transitional pattern," with high contraceptive prevalence of modern methods (78%) and low general abortion rate (12 ‰). The fall in abortion rates was most pronounced in the age group with traditionally highest rates of abortion, i.e. between 20 and 34 years, which resulted in diminishing the differences in abortion rates between age groups.

The comparison of contraceptive behaviour in the Czech Republic, France and Bulgaria based on data from the first wave of the Generation and Gender Survey highlights differences in family planning practice in the three countries. While both in the Czech Republic and France the highest percentage of women aged 18-44 years and having partner use the pills (45% and 49%), in Bulgaria the dominant effective method of contraception is condom (23%). In contrast to the Czech Republic and France 20% of Bulgarian women aged 18-44 years and having partner rely on traditional and less effective method. Furthermore, in Bulgaria high level of unmet need for contraception probably exists as almost 20% of Bulgarian women do not practice fertility control although do not intent to have a child. Variations observed in contraceptive prevalence and in the mix of methods are determined both by the socio-demographic characteristic of the respondents and by macro-level factors such as legislation, reproductive health care system, family planning program or cultural factors. The impact of individual characteristic on the use of modern method (pills and IUD) was analysed by binary logistic regression. After adjustment for all characteristics in the table 1 the use of the pill is statistically significantly associated with type of partnership, the age and education in all three countries. The Czech youngest women are eight times more likely to use the pill or IUD than women 45 to 49 years old. Not living with a partner significantly predicts the use of the pill as well as higher education attainment. Interestingly, number of children did not prove to be a statistically significant predictor in all countries under study.

Discussion

The East-West division has been partly maintained, however low abortion level in some Eastern European countries suggests that new abortion pattern has been developed. Is it really a new abortion pattern or rather the pattern similar to that registered in most Western European countries?

The increase in contraceptive prevalence itself is not sufficient determinant of reduced level of abortion. Rather the shift in method mix toward modern contraception can induce the decline in abortion level. The previous studies (Marston and Cleveland 2003) showed the inverse of the relationship when proportion of women using traditional methods was plotted against abortion rate. Reliance on abortion rises with the prevalence of traditional method of contraception. Accordingly, the high abortion rate in Bulgaria can be explained by high prevalence of using traditional method and still high propensity to rely on induced abortion. Only modern contraception can replace abortion.

In Eastern Europe two ways of birth control transition towards new reproductive pattern of "lowest low fertility" could be identified. The one is based on the increased use of efficient contraceptive methods and did not result in any increase in unmet need for family planning as no increase in abortion rate was observed. This was the case of the Czech Republic, Slovakia and Slovenia, where once there were conditions for effective family planning, the abortion rate could rapidly fall without any legislative restrictions on access to abortions (Kocourková and Fait 2011). The increase in contraceptive use has been sufficient to encompass both the sharp decline in abortion and the trend towards fertility postponement. Significant improvements in contraceptive practice has encouraged shaping of a new reproduction pattern in the Czech Republic, i.e. decrease in births of the first order.

The alternative way of transition was discovered in Romania and Bulgaria, and in the former Soviet republics (except Lithuania), where the increased unmet needs due to fertility decline at the end or the 1980s and at the beginning of the 1990s, was not sufficiently compensated by contraceptive prevalence rise and resulted in the increase in total abortion rate. Although subsequently decline in abortion rate has been registered, some experts pointed out that the number of unreported, privately performed induced abortions particularly in Russia, Ukraine and Romania has increased substantially (Sedgh et all 2011). The declines rather represent a combination of real declines in incidence and a shift to unreported abortions. Significant reduction in the abortion rate would be obtained if most traditional contraceptive methods shifted to modern methods.

The increase of abortion rate in 1990-1996 in Romania had significant impact on fertility level. Indeed it had an effect on births of second and third order, however it did not contribute

to first birth postponement (Muresan 2008). Decline in abortion rate without the widespread use of effective birth control methods is not sufficient to encourage the shift in reproduction pattern. Van de Kaa (1997) identified modern contraceptives as the means that made possible not only the low fertility but they also acted as a catalyst of changes in reproductive pattern within the concept of second demographic transition.

The early abortion pattern continues to exist although it is no more dominant only for North-Western part of Europe. The relatively high teenage abortion rate and abortion rate of women aged 20-24 years is due to the great variation in quality and quantity of sexuality education and sexual and reproductive health services financing, and partly to a growing demand for terminations from women in ethnic minority groups (The Reproductive Health Report 2011). Bajos et al. 2004) attributes the relatively high abortion rate to the difficulties met by women in managing their daily contraception. Recent liberalization of abortion law in Spain is likely to have improved access to abortion as well as better reporting of abortions.

The late abortion pattern based on high abortion rate continues to exist as well. Abortion rate is high in societies where low contraceptive prevalence or use of ineffective methods is combined with low-fertility norms, and in societies with a high propensity to rely on induced abortion (Bongaarts and Westoff 2000). Accordingly, some increase in contraception prevalence was probably not accompanied by the replacement of traditional methods with more effective alternatives in these countries. Moreover, most of women still rely on induced abortion.

Besides, a new transitional pattern was identified based on low abortion rates across all age groups. In this cluster there are four Eastern European countries that formerly registered high abortion rate together with Italy, Germany, and Belgium that have been registered low abortion rate for most of the time under study. In the Czech Republic both young and older women improved their contraceptive behaviour although the highest increase in use of the pill was registered among young women below the age of 25 years. As a result young women do not rely on abortion when planning childbearing but rather prevent unintended pregnancy.

While the proportions of users of contraceptive methods vary considerably particularly between the Czech Republic and France on one side and Bulgaria on the other, the characteristics of the users of modern effective methods were found to be similar. Therefore,

the causes of these variations might be partly explained by the macro-level factors. Similar findings were presented by Troitskaia and Avdeev in 2010.

Conclusion

The main results could be summed up as follows: (1) The East-West divide has disappeared although the former Eastern and Western patterns have remained in some countries. The new "transitional" pattern has emerged. (2) There is a pattern of convergence as regards trends towards lower abortion level, but a pattern of divergence as regards structure of abortions and use of modern contraception. (3) Behind the recent clustering of EU countries by birth control, the new factors could be identified: degree of transition towards later childbearing, contraceptive prevalence of modern methods, and size of immigrant population that have abortions at higher rates. (4) The use of modern methods of contraception rather depends on structural macro-level factors and cultural traditions as the impact of individual characteristics on the use of contraception do not differ much between countries under study.

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Sedgh G, Singh S, Henshaw KH et al. 2011. Legal Abortion Worldwide in 2008: Levels and Recent Trends. *Perspectives on Sexual and Reproductive Health*. 43(3): 188-198.

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Van de Kaa 1997. Option and Seque nces: Europe´s Demographic Patterns. Nethur-Demography Paper No. 39.

Westoff CF, Hammerslough CR, Paul L 1987. The potential impact of improvements in contraception on fertility and abortion in Western countries. *Eur J Population*; 3: 7-32.

Figure 1. EU countries by general abortion rates in 1989 and 2009 (abortions per 1000 women aged 15-49)

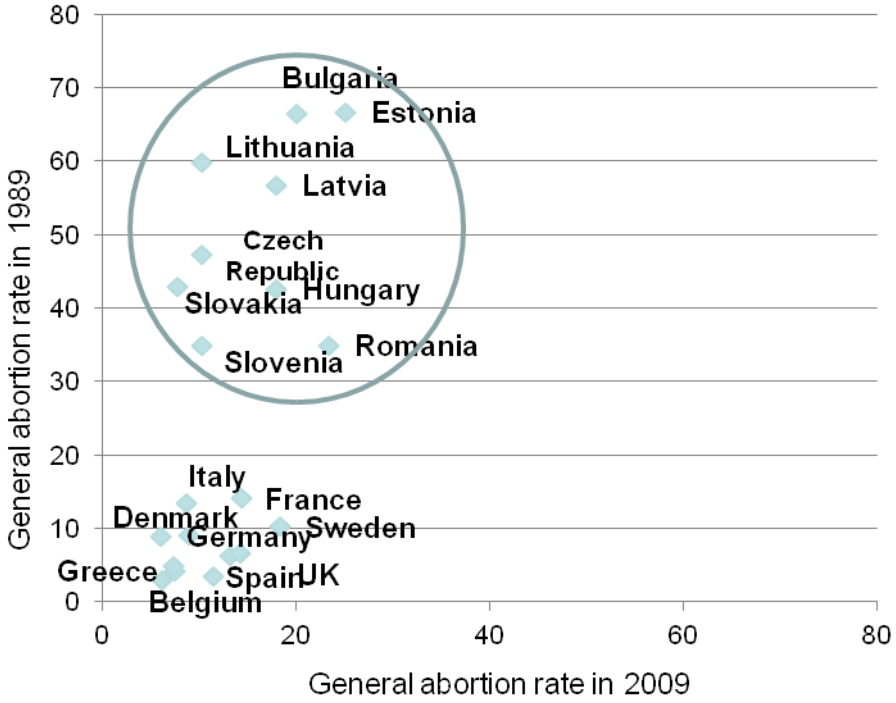


Figure 2. General abortion rate in 2009 in EU Member States (abortions per 1000 women aged 15-49)

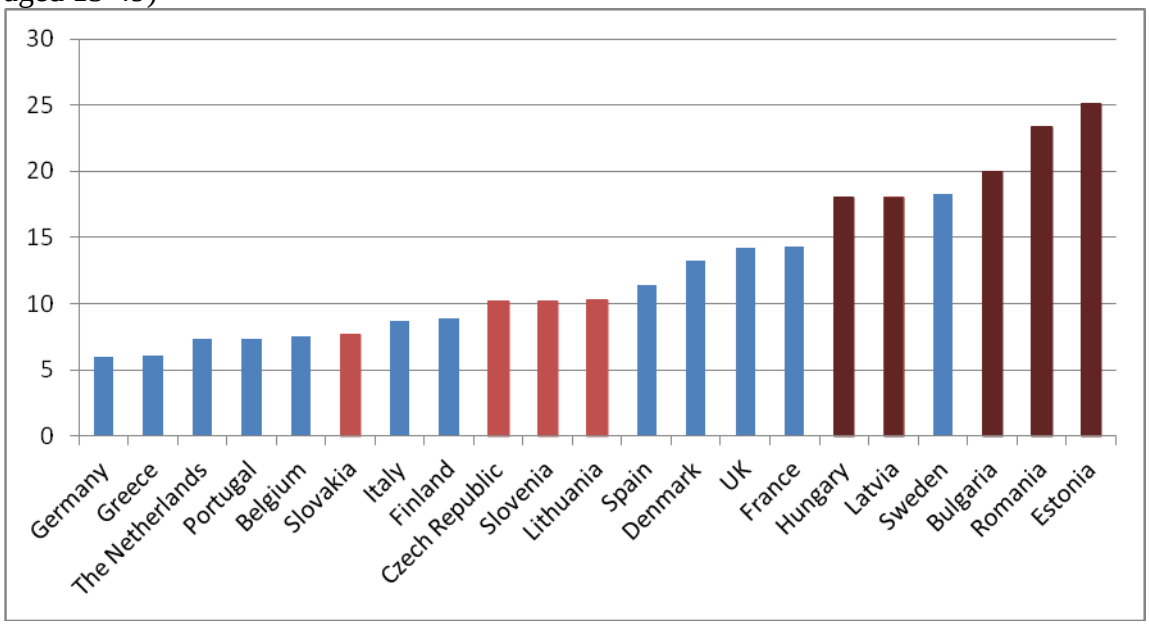


Figure 3. Correlation between abortion ratio and prevalence of modern contraceptive use around 2000

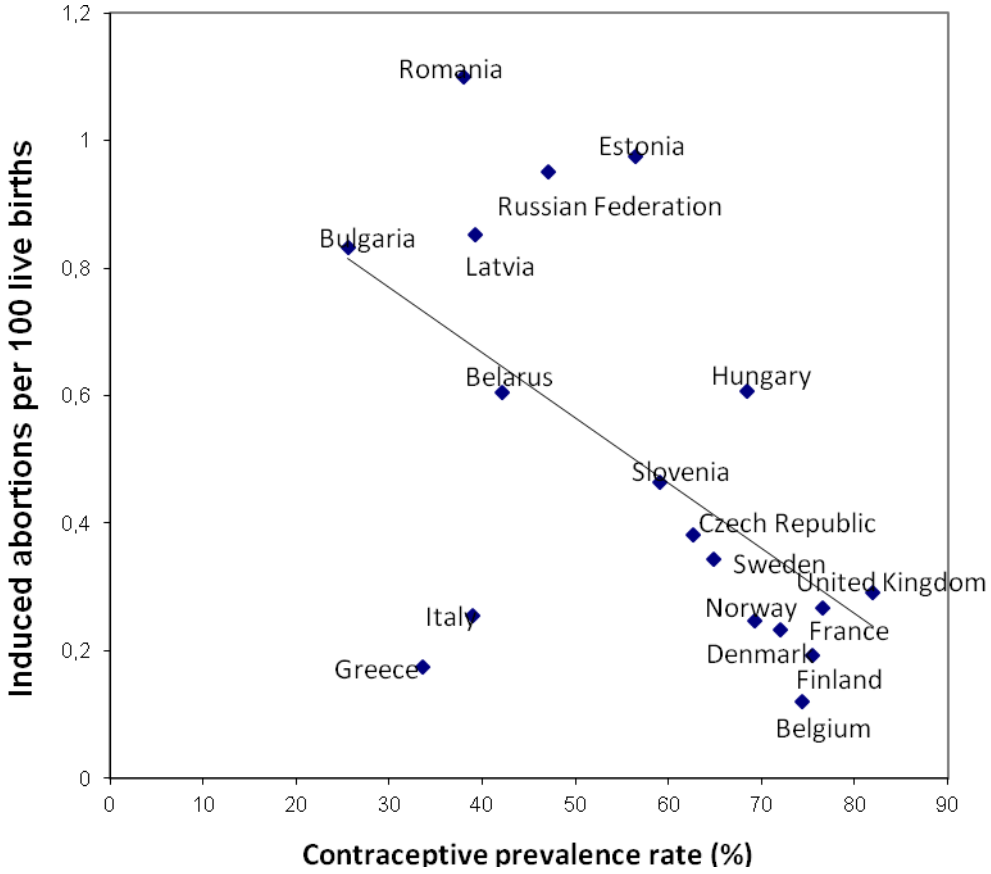

Induced abortions per 100 live births
Contraceptive prevalence rate (%)
1,2
1
0,8
0,6
0,4
0,2
0
0
10
20
30
40
50
60
70
80
90
Romania
Estonia
Russian Federation
Bulgaria
Latvia
Belarus
Hungary
Slovenia
Czech Republic
Sweden
United Kingdom
Norway
France
Italy
Denmark
Greece
Finland
Belgium

Figure 4. Trends in total induced rate and

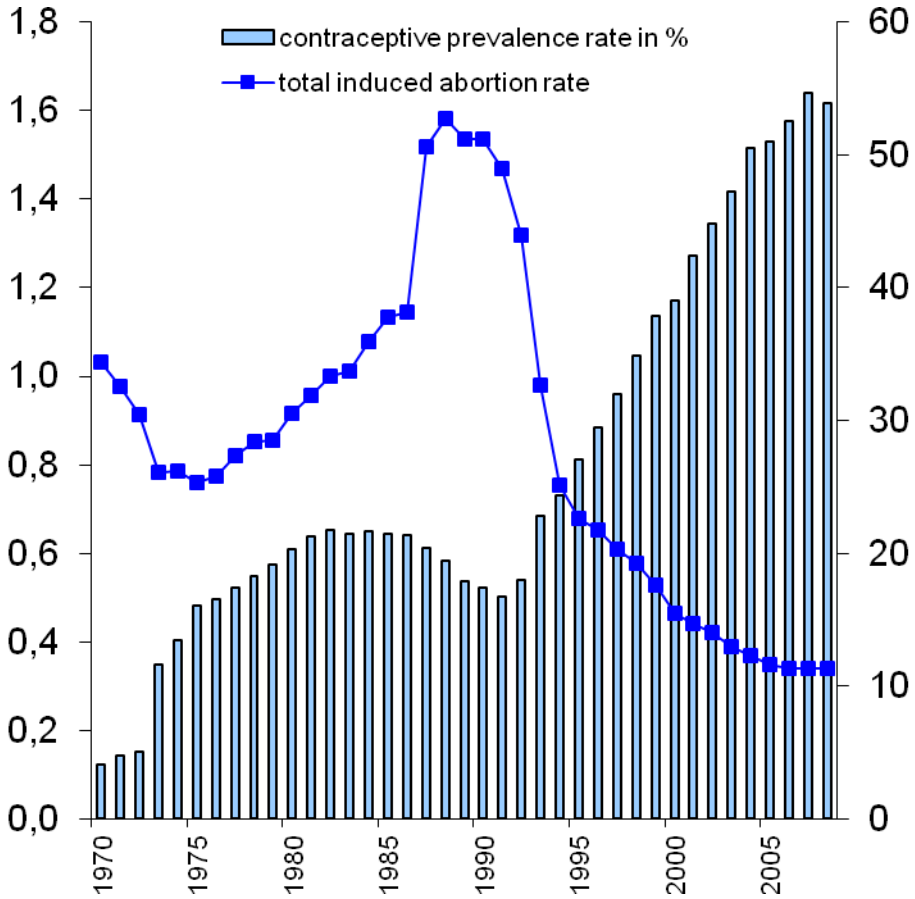


Figure 5. The Czech Republic: trends in TFR and TAR

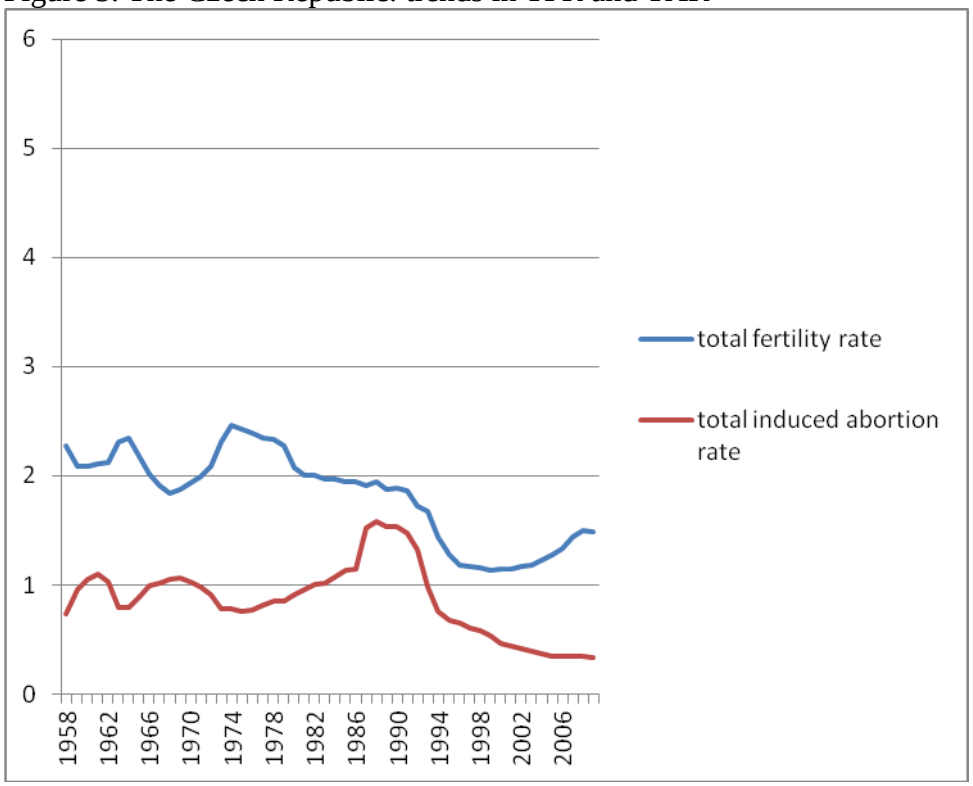


Figure 6. Romania: trends in TFR and TAR

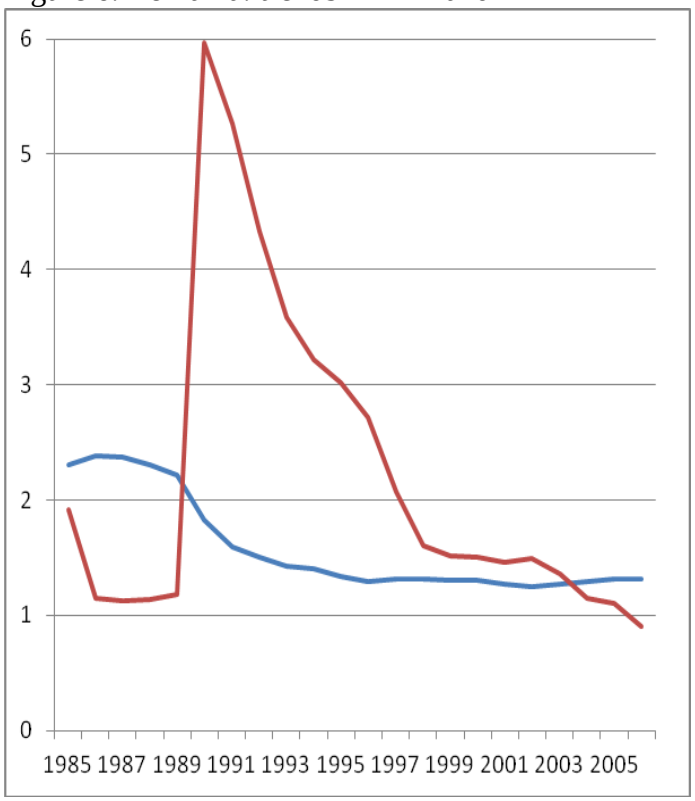
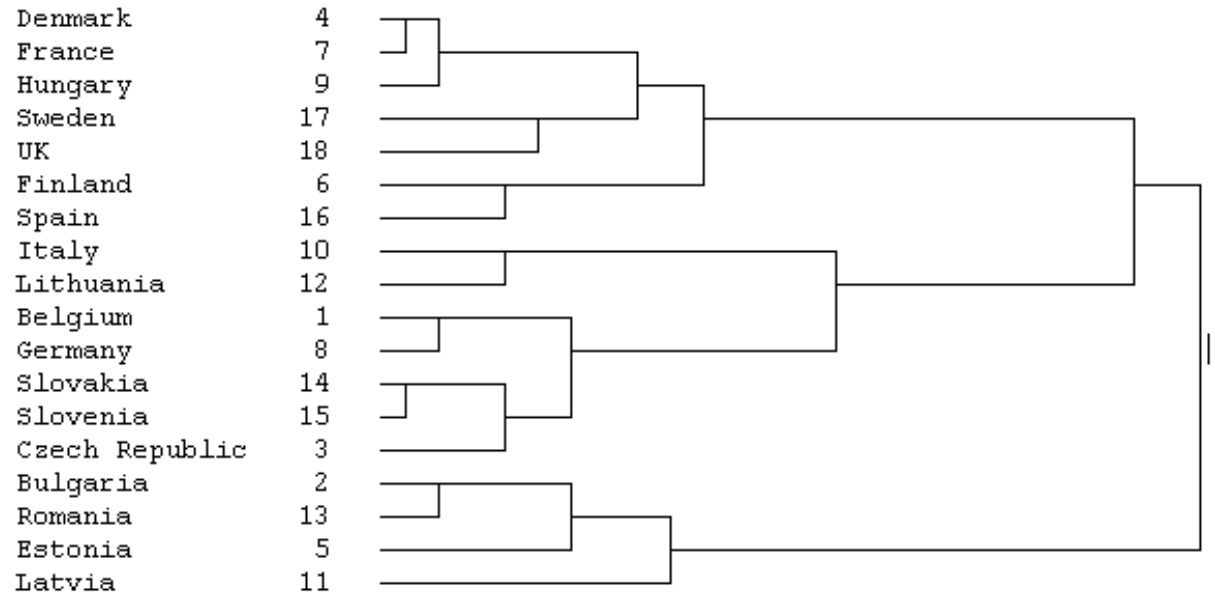


Figure 7: Clusters of countries characterized by similar birth control pattern



Notes: Dendrogram using average linkage between groups
Variables included into cluster analysis: Abortions per 1000 women aged 15-49 (2009), Contraceptive prevalence rate of modern methods (latest available data), Percentage of pregnancies ended with an abortion among women aged 15-19 (2009), Share of abortion rates in the age groups 20-24 to 25-29 (2009), Abortions per 100 live births of women aged 35-44 (2009)

Figure 8. Age-specific abortion rates in 2009 (abortions per 1000 women)

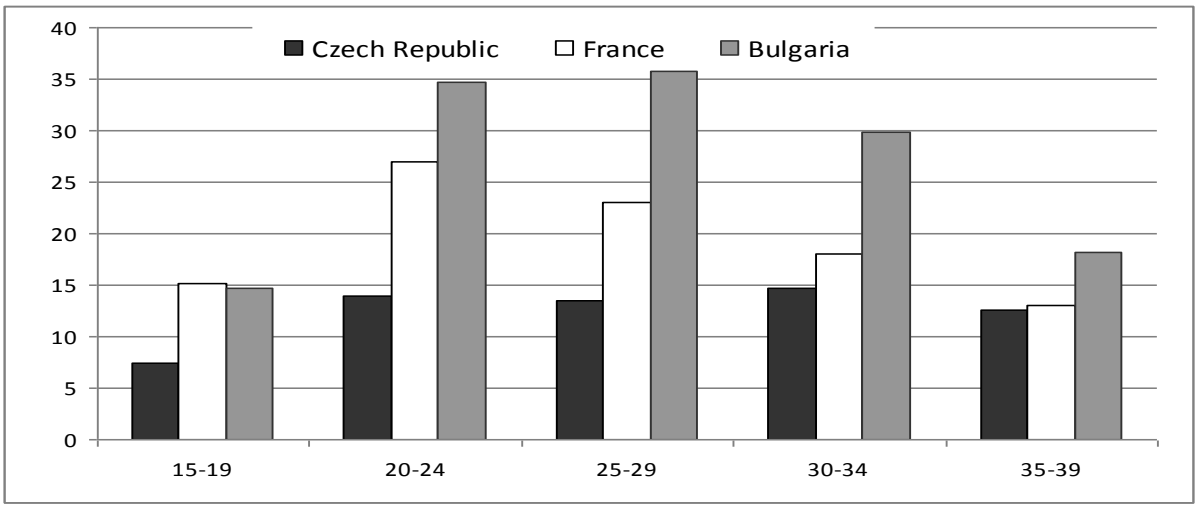


Figure 9. Percentage distribution of women by method of contraception, GGS 1, women aged 18-44 having a partner (GGS 1 – first wave of Generation and Gender Survey)

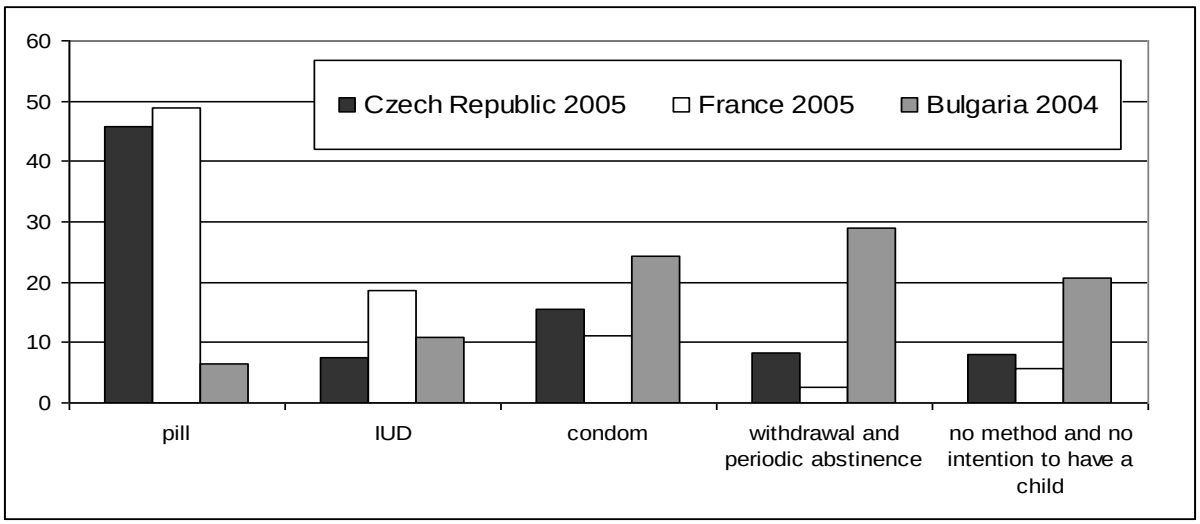


Table 1: Contraceptive use of the pill or IUD by individual characteristics (odds ratio)

	Czech Republic	**France**	**Bulgaria**
Type of partnership			
living together (ref.)	1	1	1
not living together	1.78***	1.43**	1.35**
Age group			
18-24	8.00***	6.65***	3.69***
25-29	2.83***	3.37***	2.23***
30-34	1.85***	1.93**	1.45**
35-39	1.76**	1.89**	1.36*
40-44	1.34	1.45	1.14
45-49 (ref.)	1	1	1
Number of children			
0 (ref.)	1	1	1
1	1.02	1.12	1.15
2	1.20	1.23	1.11
3 +	1.09	1.13	1.21
Educational level			
lower (ref.)	1	1	1
Secondary	1.06	1.31*	1.12
Higher	1.26*	1.42*	1.39**
Number of users	*2334*	1634	*556*

Data source: GGS1 (first wave) in the Czech Republic (2005), in France (2005), and Bulgaria (2004)
Note: Logistic regression, ***p<0.01; **p<0.05; *p<0.1