

Relationships Between Abortion and Contraception
in Republics of the Former Soviet Union

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BACKGROUND

For several decades one of the most outstanding demographic features of most of the former Soviet republics and other nations of eastern Europe has been their high reliance on induced abortion as a means of birth prevention. In many of these nations induced abortion was the single most important factor in controlling fertility. In recent years, abortion rates and ratios in many of the countries of this region are known to have been among the highest in the world. Although complete statistics on the utilization of methods of birth prevention have not generally been available until recent years, when large population-based, nationally representative surveys have been carried out in a number of countries, the conventional wisdom had been that abortion constituted the principal means of birth prevention in much of the region.

Although reliable national, population-based statistics did not exist on the topic, it has been inferred, based in large part on the rates of abortion in effect, that contraceptive prevalence, particularly of modern methods in the former Soviet Union, must be quite low. The reasons given for the widespread reliance on abortion rather than contraception as the primary means of birth prevention have been the subject of considerable discussion. Among the factors cited have been the limited availability of modern contraceptive methods, the poor quality of the methods available, fears about possible health effects and side effects of contraception, particularly hormonal methods, and the easy access to and low cost of induced abortion for women throughout the former Soviet Union that led women to think more positively about abortion relative to other methods of birth prevention.

In the past decade or so there have been indications that trends in fertility, abortion, and contraception have been changing rapidly in many places in this part of the world. Without doubt, fertility has fallen to unprecedentedly low levels almost everywhere. From level that had been among the highest in Europe previous to the breakup of the Soviet Union, fertility rates in many places have fallen to among the lowest in the world, and far below replacement level almost everywhere. Concurrently, national and local statistics in most places have revealed substantial declines in abortion incidence. It should be added, though, that the declines have coincided with a sharp increase in the proportion of induced abortions that were so-called miniabortions or menstrual regulation. It has been hypothesized that what has been occurring is not so much a real decline in abortion rates as a substitution of miniabortions for the more conventional procedures, with miniabortions being less completely reported than conventional procedures. However, analysis of data in several countries has indicated that abortion rates have truly been in decline. The availability of abortions from private sector providers has also increased in most places. Abortions carried out by these providers are usually not included in official figures, placing the completeness of those figures in some doubt.

Obviously, there are close links between pregnancy, induced abortion, and contraception in any given population. Among couples, barring extensive use of sexual abstinence, intentional fertility control is carried out by some combination of contraception (pregnancy prevention) and induced abortion (pregnancy termination). In most of the former Soviet Union and other countries formerly under Soviet control, more than anywhere else in the world in recent decades, fertility control has been predominantly achieved through the practice of induced abortion. However,

substantial changes in the balance between contraception and abortion appear to be underway. Sample surveys, vital statistics and other official statistics indicate that rates of fertility and pregnancy are falling and that the prevalence of use of modern contraception seems to be growing as abortion rates fall.

The principle objective of this paper is to examine the current balance and interactions between contraception and abortion in four countries of the former Soviet Union. We describe current levels and recent trends in contraceptive use, as well as the extent to which women/couples utilize induced abortion as a means of preventing unintended births. Having described the current situation in regard to birth prevention methods within union (i.e., contraception and abortion), we then attempt to determine how abortion and contraception interact in the population as a whole. The purpose of this exercise is primarily to make determinations as to the likely impact on abortion rates of various changes in contraceptive and other behaviors that directly or indirectly affect abortion. It will be potentially of considerable value for policymakers and others involved in reproductive health programs to know what types of changes are likely to have the greatest effect on abortion incidence.

DATA

At the request of USAID, since 1993 the Division of Reproductive Health of the United States Centers for Disease Control and Prevention (DRH/CDC) has provided assistance in the development, design, implementation, and analysis of reproductive health surveys in several formerly communist countries of central and eastern Europe. These surveys took place in the following countries: the Czech Republic (1993); Romania (1993, 1999); Russia (1996, 1999); Moldova (1997); Ukraine (1999); Georgia (1999); and Azerbaijan (2000). All except the surveys in Russia, which covered three sites, were national in coverage. These surveys were carried out as a means of helping to evaluate various aspects of reproductive health status and needs and, in some cases, to evaluate the impact of reproductive health interventions. In this analysis we examine data from four surveys in the former Soviet Union: Russia, Moldova, Ukraine, and the Republic of Georgia.

In all of these surveys information was collected on a wide range of topics related to reproductive health status and needs. There were some differences in the questionnaires across the four countries. But all of them covered the same major topics for the most part. Among the major topics addressed in all or most of these surveys were:

- C Social, demographic, and economic characteristics of respondents
- C Pregnancy and fertility
- C Induced abortion
- C Selected maternal and child health issues
- C Contraception
- C Information, education, and communication concerning family planning
- C Issues related to young adult sexuality
- C Selected women's health issues
- C Sexually transmitted infections
- C Domestic violence.

The questionnaires generally took an average of about one hour to administer. Included in all surveys were a complete pregnancy history and a more detailed series of questions on pregnancies and abortions reported to have taken place in the five years preceding the date of interview. All except the Moldova survey also contained a five-year contraceptive calendar, on which the interviewer recorded information on the dates that every contraceptive episode began and ended and, for each episode, the method used and the reason use was discontinued.

Except for Russia, survey respondents consisted of nationwide samples of women between the ages of 15 and 44 years, regardless of marital or fertility status. A total of 5,412 women were interviewed in Moldova, 7,128 women in Ukraine, and 7,798 in Georgia. In Russia, 6,004 women were interviewed, about 2,000 in each of three survey sites. Sampling procedures varied slightly between surveys, but in general respondents were selected using three stage cluster sampling. The first stage consisted of a selection of census or electoral districts, which served as the primary sampling units. Unfortunately, no census had been conducted in most of these countries since 1989, when they were still part of the Soviet Union. The National Statistical Offices, however, provided updated population estimates at least in Moldova and Ukraine. The second stage of sampling consisted of the selection of a random starting point and a cluster of contiguous dwelling units from each selected PSU. The final stage of sampling consisted of the random selection for interview of one woman between the ages of 15 and 44 years residing in each selected residence.

RESULTS

A. Fertility

The total fertility rates for the four countries examined, as well as for the other countries formerly in the western part of the Soviet Union for 1991 (the year the Soviet Union disintegrated) and 2000, according to official statistics, are shown in Table 1. It is clear from these figures that fertility fell rapidly in the 1990s throughout this part of the world, with declines all of a similar magnitudes, ranging from 32% (Belarus) to 45% (Georgia). This represents a decline of about one-third in less than a decade in these countries. The fact that the fertility rate is well below replacement level in all countries in the area and that population size has begun to decline in a number of them has generated great concerns in these countries.

Unlike the other parts of Europe, where fertility tends to begin at late ages, in all four surveyed countries, as well as virtually all other countries in the area, childbearing tends to be heavily concentrated at young ages, particularly 20-24 and 25-29 (Table 2). Survey results show age-specific fertility to be by far the highest among 20-24 year-old respondents in all four countries (107–158 births per 1,000 women). By age 30-34, however, age-specific fertility had dropped to only 25 to 48 births per 1000, and births to women 35-39 or older were quite rare. The proportion of total fertility accounted for by births between 20 and 29 years of age ranged from .59 in Georgia up to .80 in the Russia survey population.

In spite of the fact that women continue to marry and begin childbearing early in their lives, it is

equally clear that most women currently plan to have small families. Survey data on the desire for more children does not support those who contend that fertility in the region has fallen largely because of reasons related to such factors as subfecundity, environmental problems, alcoholism, and lack of sexual activity. (Although some of these factors may have contributed in some ways to falling fertility.) In each of the four countries, about two-thirds of fecund women in union (range 62% to 66%) reported that they wanted to have no more children (Table 3). There were substantial differences across countries when the number of living children was controlled, however. One-child families seem to have become a much more acceptable option in Russia and Ukraine than in the more traditional and rural societies of Moldova and Georgia. In the former, one-half of married, fecund respondents with one living child wanted no more, compared with 31% and 17%, respectively in Moldova and Georgia. In all countries, however, relatively few women with two or more living children said they intended to have any more children.

It is also clear that there is a substantial number of unintended pregnancies among women in all four countries. This is borne not only indirectly from the high rate of induced abortions (discussed below), but also by the reports of women regarding the planning status of recent pregnancies (Table 4). In all survey populations except Moldova, a majority of recent pregnancies (from 54% to 66%) were categorized as unintended. In all cases most of the unintended pregnancies were classified as unwanted. The proportion of pregnancies classified as unwanted was consistently between one-third and one-half. Even among women with only one living child at the time of pregnancy, large proportions of pregnancies were unintended, especially in Russia (70%) and Ukraine (63%). The last column of Table 4 shows total unintended pregnancy rates from the four survey populations for the period two-three years before the surveys. This gives a better idea of the incidence of unintended pregnancy than the percentage distributions of planning status, since it is unaffected by the level of intended fertility. These figures show that, in the population surveyed in Georgia there were an average of 3.7 unintended pregnancies per woman, compared with 2.4 in Russia, and 1.5 in Ukraine and Moldova.

B. Induced Abortion

Table 5, the percentage distribution of the outcomes of all reported pregnancies ending in the previous five years, indicates the degree to which abortion has been used to control fertility in these former Soviet republics in recent years. Clearly, in the absence of abortion, without compensating increases/improvements in the use of methods to prevent pregnancy, fertility rates would have been far higher than they currently are in these countries. In Russia and Georgia about 6 of every 10 pregnancies reported were terminated by induced abortion. In the other two countries abortion was somewhat less common, but was still widespread by world standards, with 47% in Ukraine and 37% in Moldova. (The induced abortion figures include so-called “miniabortions”, early term vacuum aspiration, which has become an increasingly popular method of pregnancy termination in recent years in the former Soviet Union.)

There were considerable differences between the four populations surveyed in abortion levels, but the rate was very high in each of the populations. Based on responses of survey respondents, the total abortion rate (analogous to the total fertility rate) for the two years preceding the survey ranged from 3.7 abortions per women (possibly the highest rate in the world) in Georgia to 2.5 in

Russia, 1.6 in Ukraine, and 1.3 in Moldova (Table 6). The abortion rate (i.e., the number of abortions per year divided by the number of women of childbearing age) ranged from .125 for Georgia (i.e., 12.5% of women of childbearing age having an abortion each year), down to .043 for Moldova. Age-specific abortion rates tended to be highest between ages 20-24 and 30-34. At those peak ages, age-specific rates were particularly high in Georgia, where about one of every six women in that age span have an abortion each year. Rate fell sharply after in all countries after ages 30-34, but not nearly as precipitously as for fertility rates. Even at ages 40-44 there were still substantial numbers of induced abortions reported. This is not a surprising finding since very few live births take place among women in their later reproductive years, with the vast majority of pregnancies to women in their later childbearing years aborted.

In most places in the world there is concern about the completeness of reporting of abortions when they are included as a survey topic. In the case of these reproductive health surveys, it was encouraging that the abortions calculated from survey responses were as high or higher than the official estimates of abortion rates in all four populations, an indication that underreporting of recent abortions may not have been extensive. The officially reported abortion rates for Ukraine, for instance, for 1997 and 1998, the years approximately corresponding to those calculated for the survey were .042 and .036, respectively, about one-fourth lower than the survey rate, .054. (Official rates were adjusted to eliminate spontaneous abortions, which are included in the rates.) Despite the fact that induced abortion rates remain high by international standards, it is also apparent that abortion rates declined steeply throughout the 1990s. Although the surveys were not designed to track trends in induced abortion, official statistics in all countries reveal a drop in abortion rates during the 1990s. The reported decline in Ukraine, for instance was more than 50%, from .077 to .036.

One of the reasons that abortion rates are much higher in the European parts of the former Soviet Union than in most other places in the world, even where induced abortion is legal, is that the vast majority of unintended pregnancies are terminated. As shown in Table 7, in all four survey populations, over 80% of recent unintended pregnancies were ended by means of abortion. Despite the differences between the populations in abortion incidence, the likelihood that an unintended pregnancy would be aborted was very similar across the surveys. The figures were even more similar for unwanted pregnancies, all falling in a narrow range from 89% to 93%. This is a clear indication that despite differences in having an unintended pregnancy, all of these populations were very similar in the propensity to abort such a pregnancy once it occurred.

A. Contraception

Contraception is a key topic in all reproductive health surveys. Despite the important role contraception plays in women's health and in fertility levels, as well as its interaction with abortion, very little large-scale population based information is known to have existed in the Soviet era. For Ukraine, Moldova, and Georgia, these surveys constitute the most detailed and largest-scale examination of most aspects of contraceptive use known to exist. The Russia survey, though not national in coverage, provides an unprecedented look into contraceptive knowledge, attitudes and behaviors for a large, representative sample of Russian women. Previous to surveys such as these in recent years, most information on contraceptive use came

from national statistics on distribution of supplied methods or from small-scale studies. However, such data tend to be of relatively little value in determining overall contraceptive prevalence, method mix, unmet need for contraception, or many other aspects of contraceptive use, such as the ways in which it interacts with abortion levels.

Most of these surveys and other recent surveys in eastern Europe have revealed that the overall prevalence of contraceptive use among women in union was not much lower than in most other developed countries. With the exception of Georgia, the survey data from the four countries examined reveal contraception to be widely practiced, much more so than the conventional wisdom indicated. Since the surveys were not designed to track trends in contraceptive prevalence for more than a few years, it is not possible to determine the degree to which prevalence increased during the 1990s. The proportion of women in union currently using a contraceptive method, excluding folk methods and other methods of dubious value, such as douching, ranged from 68% to 74% in Ukraine, Moldova, and Russia (Table 8). In Georgia, however, prevalence remained at only 41%, a figure much more typical of much of the developing world.

There were considerable differences among the four countries in the prevalence of use of modern contraceptives (defined as supplied, highly effective methods), with about half of married women using such methods in Russia and Moldova, 38% in Ukraine, and only 20% in the Republic of Georgia. Thus, at least in much of the former Soviet Union, not only is contraceptive use widespread, but most of the birth prevention techniques used are modern ones with low theoretical failure rates. On the other hand, despite the differentials between populations in overall contraceptive prevalence, there were quite small differences in the prevalence of traditional methods (i.e., withdrawal and periodic abstinence, since folk methods and douching have been discounted). Traditional method prevalence in all four populations was between 20% and 30%. Thus, the proportion of methods used that were modern necessarily varied considerably, from 68% in Moldova down to 49% in Georgia.

In all four populations, the most widely used modern method of contraception was the IUD, employed by between 10% (Georgia) and 38% (Moldova) of women in union. IUDs accounted for between 47% and 76% of all modern method use. This is likely a vestige of the Soviet health system, which limited the availability of other permanent or long-term contraceptive methods and did not encourage the use of hormonal methods, which were thought to carry with them negative health consequences and serious side effects. Given the hormonal formulations available until recently, it is likely that side effects were a considerable problem for many oral contraception users. Condoms were the only other modern method in common use in all four populations, employed by between 6% (Moldova and Georgia) and 16% (Russia) of women in union. Russia and Ukraine have had recent well publicized upsurges in the prevalence of STDs and HIV, which may have contributed to the increase in condom use in those two countries. No other modern method was in widespread use across the four countries. Oral contraceptives were being taken by 8% of in-union Russian respondents, but no more than 3% elsewhere. Despite the fact that most respondents in each of the populations reportedly wanted no more children, except for the IUD, very few women were using long-term methods; only 1%-3% of women in union had been contraceptively sterilized and virtually no partners of respondents in any of the surveys had

undergone vasectomy. Among traditional methods, the balance between periodic abstinence and withdrawal varied greatly.

The inclusion in the survey questionnaires of a contraceptive history for the five years prior to interview allowed an examination of recent trends in contraception. Clearly, month-by-month retrospective contraceptive histories do not provide perfect information for every month in the time period in question for every woman interviewed. However, the data are thought to provide good descriptions of general short-term trends in contraceptive prevalence and method mix. Survey results indicate that contraceptive prevalence among all 15-39 year-old women (since the questionnaires did not include a marriage history, it was necessary to examine trends for all women, not just those in union) increased steadily in the years leading up to the survey in all four populations (Table 9). Overall use grew by an average of about 1 percentage points per year for five years in three of the countries and about twice as fast in Moldova. However, the use of traditional methods changed very little over the period, with most of the growth in contraception accounted for by growing use of modern methods.

The percentage of respondents classified as having unmet need for family planning services was quite high, considering that the rates of contraceptive prevalence were also revealed to be high. Respondents met the definition of having unmet need if they were sexually active, fecund, not currently pregnant with an intended pregnancy, did not want to become pregnant at the time of interview, and were using no method of family planning of recognized efficacy (Table 10). Even in Moldova, the population with the lowest percentage of women with unmet need, the figure was 7%. In Russia this figure was 12% and in Ukraine and Georgia, 15%. These figures are much higher than would typically be found in other developed low fertility countries. If the definition of in need is expanded to include users of traditional methods of family planning--predominantly withdrawal and periodic abstinence--the proportions in need rise greatly, ranging from 23% (Moldova) to 37% (Ukraine). In developing countries such high contraceptive prevalence would normally preclude such high levels of unmet need. However, in settings of such low actual and desired fertility, such as we find in much of the former Soviet Union, relatively high rates of contraceptive use and unmet need are not necessarily incompatible, for reasons we discuss later.

A. Interactions between contraception, abortion levels, and other factors

Since these surveys collected a broad variety of detailed information on pregnancy, fertility, and contraceptive use, in addition to induced abortion, it allowed us to perform some fairly simple modeling to try to determine how changes in several parameters might affect levels of induced abortion. This exercise allows one to draw some general conclusions about how various types of change would likely impact the incidence of induced abortion. Since induced abortion is demonstrably more risky to women's health than any effective form of contraception, such reduction in abortion incidence would likely translate into improvements in women's reproductive morbidity and mortality. The modeling techniques used here are admittedly not precise. However, they should prove adequate for the purposes for which they are being used. That is, to estimate what types of program efforts and behavioral changes are the most likely to yield further significant reductions in abortion incidence in the countries examined.

The technique used to project abortion rates under different sets of assumptions is to estimate the proportion of specific categories of women who would have an induced abortion over a one year period under different levels of four parameters: contraceptive prevalence, contraceptive method mix, contraceptive failure rates (method-specific), and proportions of pregnancies aborted. Estimates of these parameters were derived survey data from, including the contraception and pregnancy calendars included in each. To model the effect on abortion incidence of changes in the parameters, alternate values of them were substituted and projected abortion rates calculated.

The parameters that will be varied consist of three aggregate contraceptive variables and one abortion variable. The contraception variables are proximate determinants of unintended pregnancy, while the fourth variable is a proximate determinant of induced abortion. These variables are:

1. Contraceptive prevalence
2. Contraceptive method-mix
3. Use-effectiveness of contraceptive methods
4. Propensity for abortion after unintended pregnancy has occurred.

In other words, there are three ways in which contraceptive behavior affects the probability of having an abortion: whether contraception is used; the type of method used; and the effectiveness with which contraception is used. The fourth important behavior is whether a woman/couple decides to have an abortion once an unintended pregnancy occurs. Before simulations could be carried out, it was necessary to calculate baseline estimates for each of these parameters. Most could be estimated from data available from the reproductive health surveys. Based on survey responses, contraceptive prevalence among all respondents was 59% in Russia, 54% in Ukraine, 54% in Moldova, and 25% in Georgia. The baseline method mix is based on the results shown for all women in Table 9. Method-specific failure rates were calculated using life table techniques for the five years prior to interview for all methods in widespread use. The one-year failure rates used were:

Method	Ukraine	Russia	Moldova	Georgia
IUD	.014	.021	.019	.019
Orals	.059	.085	.064	.046
Condoms	.071	.106	.128	.091
Periodic abstinence:	.156	.234	.232	.193
Withdrawal:	.117	.164	.244	.169

(No other methods were found to be widely used in any of the surveys.) The overall failure rate, calculated by weighting these rates together by the proportion of women using each of these methods. The percentages of unintended pregnancies that were aborted in the five years previous to the survey were .83 in Russia, .82 in Ukraine, .83 in Moldova, and .90 in Georgia. Some of these figures may be somewhat inaccurate due to reporting deficiencies. Small errors in these parameters are unlikely to affect the conclusions drawn from this analysis, however.

Tables 11-14 use Ukraine as an example to demonstrate the process employed in performing

perform the simulation

1. Effects of increasing contraceptive prevalence

The first simulated change in variables affecting abortion was the overall rate of contraceptive prevalence, to determine the extent to which increases in the level of contraceptive use, without changes in the method mix or the effectiveness with which methods are used at the time of the survey, would decrease abortion incidence. Table 11 examines the projected impact of changes in prevalence on abortion levels.

The top panel of Table 11 displays estimates of the extent to which increases in the contraceptive prevalence rate (CPR) among all women would reduce the number of abortions performed on women who became pregnant owing to non-use of contraception. We estimated that such abortions in the period leading up to the 1999 survey contributed approximately .0465 to the induced abortion rate (i.e., in one year 46.5 abortions per 1,000 women occur because of failure to use contraception). The first increase of .02 in the CPR yields a decline of approximately .0109 in abortion incidence, with similar reductions occurring for every 2 percentage point increment in the CPR.

When contraceptive prevalence increases, the number of pregnancies resulting from contraceptive failure also increases. This small increase needs to be taken into account, since it negates some portion of the reduction in pregnancy from nonuse. The second panel of Table 11 shows the projected effects of increased CPR on abortion rates due to increases in the number of abortions resulting from contraceptive failure. At the current CPR of .535 for all 15-44 year-old women, we estimate that about 3.47% of all 15-44 year-old women in the population would have an abortion in a one-year period because of contraceptive failure. Each increase of 2 percentage points in the proportion using contraception would increase the abortion incidence from contraceptive failure by about 1.2 abortions per 1,000 women per year.

Finally, a small proportion of the population consists of women who say they intended to become pregnant, but, for a variety of reasons, ended up terminating their pregnancy. The contribution of this group to abortion incidence is small enough that it would not be significantly affected by any realistic changes in the CPR and will not be taken into account in these simulations.

Thus the projected net change in the abortion incidence from a 2 percentage point increase in CPR (shown in the bottom panel of Table 11) in Ukraine would be a decline of about .0097 or about 10 abortions per 1,000 women per year.

The first panel in Table 15 shows the results of the simulation for each of the four populations examined. Noteworthy is the fact that there is very little difference across them in regard to the abortion impact of increased contraceptive prevalence. Each two percentage point increase in prevalence, all else remaining the same, would result in an estimated decline in abortion incidence of between .0086 (Moldova) and .0098 (Georgia), about 9-10 abortions per 1,000 women of reproductive age. Given the sampling errors and the simple assumptions of this methodology, this difference is virtually meaningless. All parameters are similar in Russia, Ukraine, and Moldova,

making the similarity of results, at least for those three populations, not surprising.

2. Effects of changing contraceptive method mix

A second approach to reducing levels of unintended pregnancy and, hence, induced abortion incidence, would be to implement interventions that would result in many women/couples currently using typically less effective contraceptive methods switching to more effective methods. In this exercise, it is assumed that the CPR and method-specific failure rates remain unchanged. Projecting the effect of such changes on abortion levels is more straightforward than modeling changes in CPR, since it is only necessary to examine changing risks for one group of women: those currently using contraception.

The estimated impact of three selected method mix scenarios can be seen for Ukraine in Table 12. Assumptions need to be made about how many women would switch to more effective methods and exactly which methods they would turn to, since failure rates between modern methods vary considerably. New all-method failure rates, proportions of women becoming pregnant owing to contraceptive use-failure, and proportions of women having abortions in a one-year period, were recalculated, depending on the method-mix considered. Clearly, the scenarios selected are arbitrary, selected to be illustrative. Depending on what are deemed realistic scenarios in a particular population will govern the simulation performed.

Since withdrawal and periodic abstinence are the least reliable of the methods commonly used in these populations, the model estimated the decline in abortion rates if various proportions of users of those methods switched to more effective ones. If, for instance, one-half of users of those methods switched to modern methods, distributing them across the new methods in a prorated manner, the estimated percentage of contraceptors having an abortion following contraceptive failure in one year would be .027, rather than .035. If all users of the traditional methods switched to modern methods, the decline would be to .018, a reduction of 17 abortions per 1,000 women per year. More complex models can be employed, whereby, for instance, limiters using traditional methods switch to the IUD and spacers switch to an assortment of modern methods. Shifting couples from condoms to other modern methods would also reduce abortion rates noticeably, but would have the obvious trade-off of exposing more women or their partners to sexually transmitted infections. It would also be useful to project the impact of increased use of hormonal contraceptives, safe and effective methods that have not been very popular in this region, but which have recently been promoted more widely there.

The second panel of Table 15 shows results of simulated method-mix changes in the four populations examined. The projected resulting decline in the abortion rate of a 25 percent switch away from traditional methods is about twice as high in Russia and Moldova (about 8/1000) as in Ukraine and Georgia (about 4/1000). These are relatively modest changes in response to changes affecting large proportions of women/couples. With very large movement of couples to modern methods, as in the second and third scenarios, the impact on abortion rates becomes much more substantial. The impact of changes in method-mix depend primarily upon two factors, the differences in use-effectiveness between methods and the proportion of users employing methods of low use-effectiveness. Where traditional method use is somewhat less common (e.g., Georgia)

or failure rates are lower (e.g., Ukraine), the potential impact of method-mix changes are somewhat lower than elsewhere.

3. Effects of improving contraceptive use-effectiveness

A third potential strategy for reducing the incidence of induced abortion is to improve utilization of contraceptive methods or the quality of contraceptives to reduce the likelihood of unintended pregnancy. In projecting changes in use-effectiveness, we focus principally on four methods: condoms, oral contraceptives, periodic abstinence, and withdrawal. IUD failure rates are unlikely to change substantially. Other modern methods, on the other hand, are not in adequately widespread use to be able to noticeably affect abortion incidence if their failure rates were reduced.

Table 13 shows, again for Ukraine, the procedure for estimating abortion reductions deriving from various scenarios of improved use-effectiveness. Three illustrative estimates are displayed. In the first, it is assumed that one-year failure rates of all methods except the IUD, tubal ligation, and “other modern methods” are reduced by 25%. This would reduce the percentage of women in the population having an abortion resulting from contraceptive failure in one year from .0347 to .0263, reducing the overall abortion rate by about 8.4 per 1,000 women per year. If failure rates were to be reduced by 50%, the decline would be to .0184, a fall of 16.3 per 1,000. If it is assumed that it is unlikely that use of natural methods can be improved significantly, the declines would be less striking. The bottom row of Table 15 shows the reduction in abortion stemming from a decline of 50% in failure rates for condoms and OCs. This would yield an abortion rate from contraceptive failure of .0303, a reduction of 4.4 per 1,000 women.

There is considerable variation between the four populations in the abortion impact of the improvements in contraceptive use-effectiveness considered. With a 25% reduction in failure rates for all but the IUD and sterilization, abortion rates would decline by an estimated 6/1000 (Georgia) to 11/1000 (Russia). These levels are roughly comparable to the amount of change arising from a 2% increase in contraceptive prevalence. A 50% reduction would result in about twice as large an abortion reduction, though such an improvement in method use may not be feasible.

4. The effect of changes in propensity for abortion

A final parameter that could be used in projecting changes in abortion rates is the likelihood that a woman will have an abortion if she has an unintended pregnancy. This projection is a straightforward one under the assumption that all groups of women have the same propensity for abortion. In Ukraine, for instance, 82% of unintended pregnancies were aborted in the two years prior to interview. If we assume that the unintended pregnancy rate remained constant at .062 per year, each drop of 5 percentage points in the likelihood of aborting an unintended pregnancy would translate into a decline of about 3 abortions per 1,000 women. Thus, if the propensity for abortion of unintended pregnancy fell to 72%, abortion incidence would fall from .054 to .048 (See Table 14). The propensity for abortion of unintended pregnancies falls into a fairly narrow range across the populations examined, as shown earlier (82%-90%), so the impact of changes

would be quite similar across these countries.

5. Limitations

This exercise is clearly not a precise one and contains some significant limitations. It is probably too simplistic to be considered a reliable way of projecting abortion rates with much precision. It is further limited by the fact that analysis is not done in an age-, parity-, or characteristic-specific manner. It also attributes first year contraceptive failure rates to all contraception users, regardless of how long they have been using (in fact, because of very high discontinuation rates for all methods a very large proportion of users are indeed in their first year of use). These limitations add to the imprecision of the methodology.

However, the purposes of this exercise are not so much to predict future rates of abortion with precision, so much as they are programmatic and methodological. The objective is to gain somewhat of an understanding of the degree to which abortion rates are likely to be responsive to changes in specific types of contraceptive behaviors in the former Soviet Union, since most . It is also designed as an illustration of a fairly simple methodology that requires only the type of data available from reproductive health surveys to determine the likely impact of particular types of changes. The methodology could be made more precise by building more specificity into it (making it age- or parity-specific, for instance) or by looking at the effects of multiple changes (e.g., increased prevalence along with improved use-effectiveness). Additional variables could also be considered, such as changes in fertility intentions and changes in demographic characteristics of the population. The clear downside of such changes is the increased complexity of estimation it would entail.

DISCUSSION/CONCLUSIONS

Some conclusions are very clear about the fertility and family planning situation in the European part of the former Soviet Union. Fertility rates have fallen to historically low levels in recent years. It is also apparent that the decline has, in large part, stemmed from a desire for small families among most Ukrainians, rather than, as some have hypothesized, such factors as high rates of infertility and reductions in sexual activity. At the same time, abortion rates appear to have fallen quickly, though the region as a whole still has what are likely to be the highest abortion rates in the world. The evidence is strong that contraceptive prevalence has reached high levels everywhere except in Georgia, which lags dramatically in this regard. A substantial proportion of contraceptors use, however, continue to rely on natural methods, with typically low rates of use-effectiveness. Other than the IUD, no modern, highly effective method is in very widespread use in any of the countries examined. Even though most women complete their desired childbearing at an early age, the prevalence of contraceptive sterilization remains extremely low. The increase in modern contraceptive use has been especially rapid for at least the past five years.

It has been suggested that such high rates of induced abortion are not compatible with high levels of contraceptive prevalence. However, the existence of three phenomena in this region of the world make it possible for high rates of abortion and contraception to coexist. An analysis of 1996 survey data from Russia demonstrated how this could be true (Goldberg et al, 1997). First,

overall contraceptive failure rates are relatively high. This stems from the facts that, except for the IUD, the method mix is one that is conducive to a large amount of method failure. Natural methods are widely employed and there is very little use of sterilization and relatively small amounts of hormonal contraception. Second, desired and actual fertility levels are both extremely low throughout the region. In Ukraine, for instance, about two-thirds of respondents wanted to have no more children, while only about one in ten women currently wanted to become pregnant or were pregnant with an intended pregnancy at the time of interview. Thus, most potential pregnancies were inevitably unintended. Finally, the vast majority of unintended pregnancies were terminated intentionally. Between eight and nine of every ten unintended pregnancies were aborted. When mistimed pregnancies are discounted the figures are even more extreme, with only about 5% of unwanted pregnancies resulting in live births in the previous five years. When all of this is considered together--high method failure, very low desired and actual fertility rates, and few unintended pregnancies ultimately resulting in live births--it is not at all surprising that high contraceptive prevalence and abortion rates do coexist.

Examination of the results of the simulation exercise to project the impact on abortion rates of various changes in contraceptive behavior yields some useful observations. Increased prevalence, changing method mix, and improved use-effectiveness of methods, as well as reduced propensity for abortion, would all lead to notable reductions in abortion in these countries. It should be noted, however, that, if the primary objective of abortion reduction is to improve women's health, then reducing the propensity for abortion would not be likely to advance that objective. Such a change would serve to increase the number of births, which would not be likely to reduce overall maternal morbidity and mortality, unlike improved/increased contraceptive use, which would do so. Therefore, we limit the remainder of this discussion to a comparison of the three contraceptive strategies presented.

An examination of the results displayed in Table 17 gives the sense that all of the three approaches discussed could yield substantial reductions in unintended pregnancy and, hence in induced abortion incidence. One way to compare the relative effectiveness of the three approaches is to estimate the amount of change that would be required to reduce abortion incidence by a given amount in a given country, say 10 per 1,000. In Ukraine, for example, such a goal would require approximately a 2 point increase in CPR, a movement of over one-half of natural method users to modern methods, or a reduction in failure rates for methods other than the IUD of about 30%. On the surface, it would appear that of those options the one that would be most achievable is an increase in CPR, especially in light of the relatively high rate of unmet need for contraception in the population. If rates of unmet need were already very low, it might be less realistic to attempt to reduce unmet need substantially. On the other hand, one might hypothesize that interventions aimed at reducing contraceptive failure rates may be the strategy likely to yield the desired results of the three discussed. In Georgia, though, the strategy of focusing on increasing contraceptive prevalence would likely be more achievable than in the other countries because of the much higher level of unmet need that exists there.

Some important considerations in translating such results into policies or interventions should be mentioned. First, it is not likely that any policies or interventions would focus on just one of the three strategies. However, in instances where one would be likely to yield significantly greater benefits than the others, policies could emphasize that particular strategy. Another difficulty in

selecting a strategy is the problem of determining how to compare the difficulties of achieving various objectives. For instance, if the model tell us that a 1 point increase in CPR will yield about the same benefits in terms of abortion reduction as reducing contraceptive failure rates by 25 percent, how is one to decide the relative difficulties of accomplishing those changes. In spite of these difficulties this exercise can be a useful one in that it can make policymakers aware of the likely impact of changes that may be under consideration.

Table 1
Total fertility rates*, selected countries in the former Soviet Union, 1991 and 2000

Country	1991	2000	% Reduction
Russia	1.9	1.2	39
Estonia	2.0	1.3	35
Latvia	2.0	1.2	40
Lithuania	2.0	1.3	35
Belarus	1.9	1.3	32
Moldova	2.3	1.4	39
Ukraine	1.9	1.1	42
Georgia	2.2	1.2	45
Armenia	2.9	1.1	62
Azerbaijan	2.7	2.0	26

*Source: Population Reference Bureau, World Populations Data Sheets, 1992 and 2000

Table 2
Age-specific fertility rates*
four countries in the former Soviet Union

Age of respondent	Russia	Ukraine	Moldova	Georgia
15-19	.042	.049	.057	.064
20-24	.117	.115	.158	.113
25-29	.073	.066	.088	.092
30-34	.025	.036	.040	.048
35-39	.011	.014	.017	.021
40-44	.005	.004	.006	.007

*All rates are annual rates, based on reports for the two-year period preceding the date of interview.

Table 3
 Percent of fecund women currently in union
 who plan to have no more children, by number of living children
 four countries in the former Soviet Union

Country	Number of living children				Total
	0	1	2	3+	
Russia	11.9	50.7	93.5	94.8	65.2
Ukraine	11.1	49.3	92.1	86.8	66.3
Moldova	6.9	30.9	83.2	92.0	62.0
Georgia	0.5	17.4	76.8	90.3	63.3

NOTE: Currently pregnant women are considered to have one more living child than they actually do.

Table 4
 Percentage distribution of planning status of pregnancies ending in the five years before interview
 and total unintended pregnancy rate
 four countries in the former Soviet Union

Country	Planning status of pregnancy					Total	Total Unintended Pregnancy Rate
	Planned	Mistimed	Unwanted	Unsure	Total		
Russia	32	17	49	2	100	2.4	
Ukraine	44	17	38	2	100	1.5	
Moldova	57	9	33	1	100	1.5	
Georgia	40	10	49	<1	100	3.7	

Table 5
Percentage distribution of outcomes of pregnancies ending in the five years before interview,
four countries in the former Soviet Union

Country	Outcome of pregnancy			Total
	Live birth	Stillbirth/ Miscarriage	Induced abortion	
Russia	30	9	61	100
Ukraine	45	8	47	100
Moldova	53	11	37	100
Georgia	35	5	60	100

Table 6
Age-specific abortion rates and other measures of induced abortion*
four countries in the former Soviet Union

Age of respondent	Russia	Ukraine	Moldova	Georgia
15-19	.044	.013	.012	.029
20-24	.137	.091	.074	.162
25-29	.105	.091	.081	.191
30-34	.117	.069	.046	.179
35-39	.064	.033	.031	.122
40-44	.037	.018	.016	.049
 Total Abortion Rate	 2.5	 1.6	 1.3	 3.7
 Abortion Rate**	 .085	 .054	 .043	 .125

*All rates are annual rates, based on reports for the three-year period preceding the date of interview.

**Proportion of women 15-44 years of age having induced abortions in one year.

Table 7
 Proportion of unintended pregnancies resulting in induced abortion,
 pregnancies ending within five years of interview,
 four countries in the former Soviet Union

Country	Planning status		
	Unintended, total	Mistimed	Unwanted
Russia	.834	.621	.889
Ukraine	.817	.595	.915
Moldova	.833	.593	.901
Georgia	.901	.765	.930

Table 8
Percentage distribution of current contraceptive method among women in union
four countries in the former Soviet Union

Current contraceptive method	Russia	Ukraine	Moldova	Georgia
Using any method	73	68	74	41
Using a modern method	53	38	50	20
IUD	25	19	38	10
Condoms	16	14	6	6
Oral contraceptives	8	3	2	2
Female sterilization	2	1	3	2
Spermicide	3	1	<1	<1
Using a traditional method	20	30	24	21
Withdrawal	8	20	22	10
Periodic abstinence	12	10	2	11
Using no method*	27	32	26	59
Total	100.0	100.0	100.0	100.0

*Includes users of douche and folk methods

Table 9
 Percent of all 15-39 year-old respondents reporting current use of contraception*
 at one year intervals leading up to survey date
 four countries in the former Soviet Union

Time	Russia	Ukraine	Moldova	Georgia**
Survey date	54.8	55.9	54.3	41.4
1 year earlier	55.9	53.6	54.4	40.6
2 years earlier	53.4	52.4	52.3	39.5
3 years earlier	54.0	51.6	49.3	37.9
4 years earlier	52.6	50.7	47.5	37.1
5 years earlier	49.9	48.8	44.5	35.2
5 year change	5.9	7.1	9.8	6.2

*Considers users of douche and folk methods not to be contraceptive users

**Women in union only

Table 10
 Percent of women with unmet need for family planning,
 according to two definitions*,
 four countries in the former Soviet Union

Country	Definition I	Definition II
Russia	11.5	27.7
Ukraine	14.9	37.0
Moldova	6.7	23.2
Georgia	14.8	27.1

***Definition I:** Women are considered to be in need if they are sexually active or in union, not pregnant, fecund, did not want to get pregnant at the time of interview, and are not using any type of contraception.

Definition II is the same as definition I, except that it also includes women using typically less effective methods of contraception (withdrawal, periodic abstinence, douche, and folk methods).

Table 11
Projected impact on abortion rate of selected changes in the rate of contraceptive prevalence, Ukraine

DECREASE IN ABORTION FROM INCREASED PREVALENCE:

Scenario (Contraceptive prevalence, all women)	Prop. of women at risk of unintended preg. from nonuse (1)	1-year pregnancy rate (2)	Prop. of women with pregnancy from nonuse (3)=(1)X(2)	% of pregs. from failures aborted (4)	% of women with abortions from nonuse unint. pregs. (5)=(3)X(4)	Reduction in abortion rate (6)
.535 (Current)	.085	.667	.0567	.820	.0465	--
.555	.065	.667	.0433	.820	.0356	.0109
.575	.045	.667	.0300	.820	.0246	.0219
.595	.025	.667	.0167	.820	.0137	.0328

INCREASE IN ABORTION FROM INCREASED CONTRACEPTIVE FAILURE:

Scenario (Contraceptive prevalence, all women) (1)	1-year all-method failure rate (2)	Prop. of women with pregnancy from failure (3)=(1)X(2)	% of pregs. from failures aborted (4)	% of women with abortions from failure pregnancies (5)=(3)X(4)	Increase in abortion rate (6)
.535 (Current)	.079	.0423	.820	.0347	--
.555	.079	.0438	.820	.0359	.0012
.575	.079	.0454	.820	.0372	.0025
.595	.079	.0470	.820	.0385	.0038

NET PROJECTED CHANGE FROM INCREASED CONTRACEPTIVE PREVALENCE:

Prevalence	Decrease from nonuse	Increase from failure	Net decrease in abortion rate
.555	.0109	.0012	.0097
.575	.0219	.0025	.0194
.595	.0328	.0038	.0290

Table 12

Projected impact on abortion rate of selected changes in the contraceptive method mix, Ukraine

Scenario	Contraceptive prevalence rate, all women (1)	All-method failure rate (2)	prop. of women with method failure (3)=(1)X(2)	prop. of pregs. from failures aborted (4)	% of women with abortions following contraceptive failure (5)=(3)X(4)	Reduction in abortion rate (6)
Current	.535	.079	.042	.820	.035	--
1/4 of natural users switch to modern methods	.535	.070	.037	.820	.030	.005
1/2 of natural users switch to modern methods	.535	.061	.032	.820	.026	.008
All of natural users switch to modern methods	.535	.042	.022	.820	.018	.017

Table 13
 Projected impact on abortion rate of selected changes in contraceptive failure rates, Ukraine

Scenario	Contraceptive prevalence rate, all women (1)	All-method failure rate (2)	% of women with method failure (3)=(1)X(2)	% of pregs. from failures aborted (4)	% of women with abortions following contraceptive failure (5)=(3)X(4)	Reduction in abortion rate (6)
Current	.535	.079	.042	.820	.0347	--
All methods except IUD and TL failure reduced by 25%	.535	.060	.032	.820	.0263	.0084
Condom and oral contraceptive failure reduced by 50%	.535	.069	.037	.820	.0303	.0044
All methods except IUD and TL failure reduced by 50%	.535	.042	.022	.820	.0184	.0163

Table 14
 Projected impact on abortion rate of selected changes in probability of terminating unintended pregnancies, Ukraine

Probability of induced abortion of an unintended pregnancy (1)	One year probability of an unintended pregnancy (2)	Proportion of women with aborted unintended pregnancy (3)=(1)X(2)	Reduction in rate of abortion (4)
.92	.062	.057	+0.006
.87	.062	.054	+0.003
.82 (current)	.062	.051	--
.77	.062	.048	-0.003
.72	.062	.045	-0.006
.67	.062	.042	-0.009
.62	.062	.038	-0.013

Table 15
 Projected decrease in abortion rates of changes in contraceptive prevalence, method mix, and contraceptive failure rate,
 four countries in the former Soviet Union

Country	Increases in contraceptive prevalence <hr/> Each increase of .02 in overall prevalence	Changes in method mix			Decreases in failure rates		
		1/4 traditional switch to modern meths	1/2 traditional switch to modern meths	all traditional switch to modern meths	All except IUD and sterilization decrease 25%	All except IUD and sterilization decrease 50%	Condoms and pill decrease 50%
Russia	.0090	.0076	.0151	.0303	.0113	.0223	.0089
Ukraine	.0097	.0042	.0082	.0164	.0084	.0163	.0044
Moldova	.0086	.0076	.0149	.0294	.0102	.0204	.0031
Georgia	.0098	.0038	.0078	.0157	.0061	.0123	.0019