DHS Analytical Studies 8

Recent Trends in Abortion and Contraception in 12 Countries

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Recent Trends in Abortion and Contraception in 12 Countries

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Preface

One of the most significant contributions of the MEASURE DHS program is the creation of an internationally comparable body of data on the demographic and health characteristics of populations in developing countries. The *DHS Analytical Studies* series and the *DHS Comparative Reports* series examine these data, focusing on specific topics. The principal objectives of both series are: to provide information for policy formulation at the international level, and to examine individual country results in an international context. Whereas *Comparative Reports* are primarily descriptive, *Analytical Studies* take a more analytical approach.

The *Analytical Studies* series comprises in-depth, focused studies on a variety of substantive topics. The studies are based on a variable number of data sets, depending on the topic under study. A range of methodologies is used, including multivariate statistical techniques. The topics covered are selected by MEASURE DHS staff in conjunction with the MEASURE DHS Scientific Advisory Committee and USAID.

It is anticipated that the *Analytical Studies* will enhance the understanding of significant issues in the fields of international population and health for analysts and policymakers.

Martin Vaessen
Project Director

Acknowledgements

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At the Centers for Disease Control and Prevention in Atlanta, several of the professional staff facilitated the acquisition of country data, in particular, Florina Serbanescu, Leo Morris, and Howard Goldberg. And at DHS, a note of thanks to Jerry Sullivan for periodic consultations on some of the intricacies of the analysis of the abortion data and for his review of the manuscript, to Sidney Moore for all she does in the publication process, and to Justine Faulkenburg for document production. I am particularly indebted to Stan Bernstein of UNFPA for his support of this work and for his comments on the manuscript.

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Executive Summary

This report is an analysis of recent trends in abortion and contraception in 12 countries of central Asia and eastern Europe—Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Moldova, Romania, Russia, Turkey, Turkmenistan, Ukraine, and Uzbekistan—where abortion had long been a major if not the principal method of birth control.[1] All of these countries have experienced sharp declines in the number of children desired and in fertility rates. Despite increasing preferences for small families, abortion rates in eight of these countries have recently declined, while the use of modern contraceptive methods has steadily increased. Two of the remaining four countries experienced little change in the prevalence of modern contraceptive methods and witnessed an increase in abortion, while in the two other countries, the number of children desired is very low and unintentional pregnancies have increased.

Most abortions are associated with pregnancies that occurred as a result of contraceptive failure—particularly the use of traditional methods such as withdrawal—and pregnancies of women who were not using contraception despite not wanting any (more) children (the "unmet need for family planning" category). In two-thirds of the countries, contraceptive failure accounts for most abortions, while in the other third, unmet need for family planning contributes most of the abortions. A cross-sectional analysis of 18 countries shows a very high negative correlation between abortion and the use of modern contraceptive methods but a moderately high positive correlation between abortion and the use of traditional contraceptive methods.

In a series of simulation models, the implications for further reductions in the prevalence of abortion are estimated. For example, if the women currently using modern methods of contraception were joined by those currently using traditional methods, abortion rates on average could be reduced by 23 percent; if women classified as having unmet need for family planning were also added to this group, abortion rates could be reduced by as much as 55 percent.

The report also examines some of the main covariates of the use of modern contraception and abortion, as well as attitudes toward abortion. Multivariate analyses using a standard set of variables for all countries highlights the importance of age, urban residence, and education.

The main conclusions are that there is strong evidence that modern contraceptive methods are replacing abortion as the primary means of family planning. At the same time, there will be continuing if not increasing pressure to avoid unintended pregnancies, which often end in abortion.

[1] Not all 12 countries are included in every analysis because of varying availability of data.

1

Background

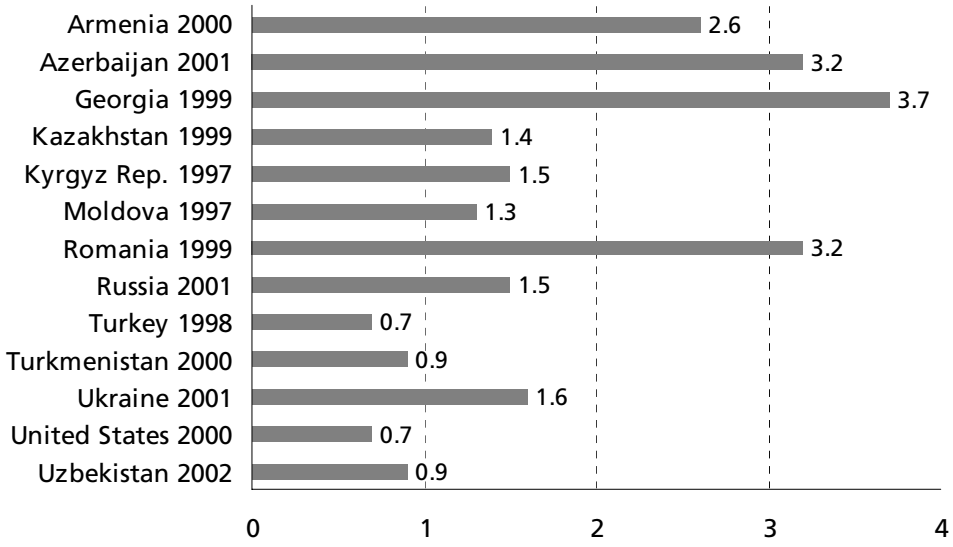
In the former Soviet Union, which included most of the countries in this study, induced abortion was the principal method of birth control. The reasons for this include the cost of importing modern contraceptive methods from the West, the poor quality of domestically produced contraceptives, the attitudes of the medical profession toward the oral contraceptives, and the availability of abortion through the government health services. Combining these factors with the decline in the average number of children desired, and the high failure rates of traditional methods of contraception resulted in high abortion rates. In most of the countries, abortion rates declined following independence in 1991, although levels have remained high in a few countries. This analysis describes recent trends in conjunction with the increase in reliance on modern contraceptive methods. The sources of data are primarily national sample surveys of women of reproductive age conducted by the Demographic and Health Surveys (DHS) program (ORC Macro) and the Reproductive Health Surveys conducted in collaboration with the Centers for Disease Control and Prevention (CDC).

2

Levels and Trends of Contraceptive Prevalence and Abortion Rates

The most recent estimates of abortion rates are shown in Figure 2.1. There is a wide range of abortion rates in these countries, from rates of less than one abortion per woman in Turkey, Turkmenistan, and Uzbekistan to total abortion rates of over three per woman in Azerbaijan, Georgia, and Romania. The estimate for the United States (Finer and Henshaw, 2003) is included in some of the figures showing abortion rates, simply to provide some perspective; it is very low by comparison.

Figure 2.1
Total abortion rate per woman



Note: Rates are based on the three years preceding the survey for women age 15-44. In Russia and the United States rates are for that year only.

In the United States, most abortions are associated with first pregnancies among unmarried women; in eastern Europe and central Asia, abortion is primarily used by married women to control fertility after one or two births.

There is an important difference between the practice of abortion in these countries and in the United States and other Western countries. In the United States, most abortions are associated with first pregnancies among unmarried women; in eastern Europe and central Asia, abortion is primarily used by married women to control fertility after one or two births.

The measurement of abortion is a particularly difficult task because of its sensitivity and, in many countries, its legal status. Many different approaches to measurement have been developed, each with its strengths and weaknesses (Rossier, 2003; Singh, et al., 2003). This comparative analysis relies mostly on self-reported abortions derived from pregnancy histories collected in personal interviews. Since most of

these countries have had decades of experience with legal and widely available abortion and, until recently, a lack of acceptable contraceptive alternatives, there is little stigma associated with the subject and the reporting appears reasonable. In some countries, the level of abortion estimated from the interview data is considerably higher than that reported by the Ministry of Health from registered data. The situation is further complicated by the increasing involvement of the private sector and mini-abortions that do not get included in official data, a problem that can lead to a mistaken view in some countries that abortion rates have declined rapidly.

The percentage of all women age 15 to 44 in these countries currently using contraception is shown in Figure 2.2 both for all methods combined and for modern methods. The lowest proportions using modern methods are in Azerbaijan, Armenia, and Georgia, which also show the highest abortion rates. The intrauterine device (IUD) is the most frequently used modern method in the study countries, while withdrawal is the most frequently used traditional method.

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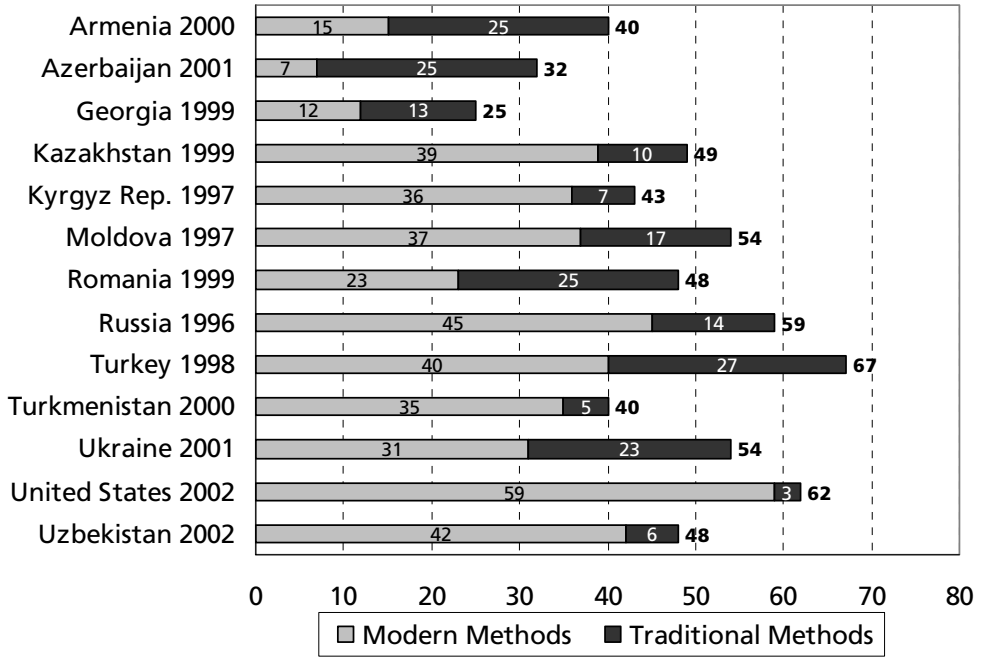
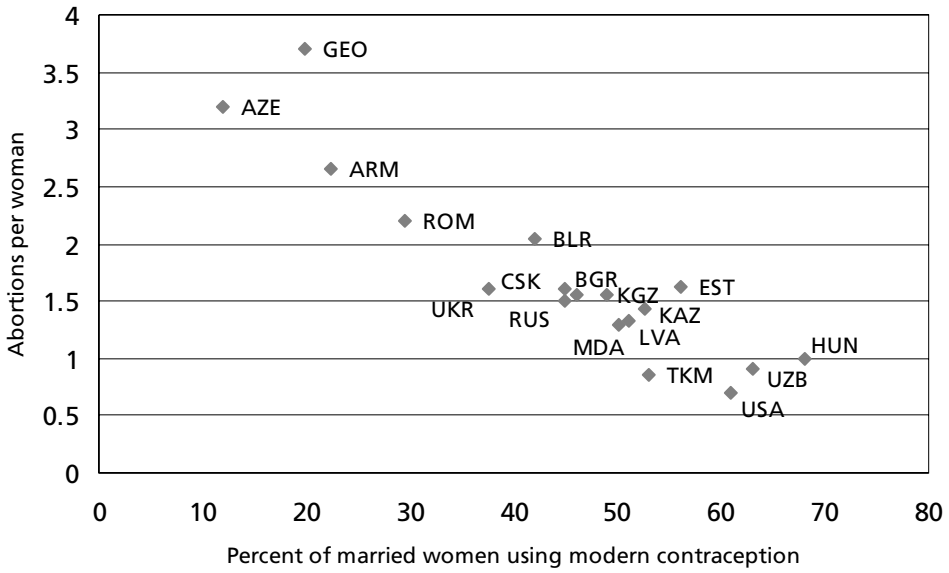
Figure 2.2
Percentage of all women age 15-44 currently using contraception



Note: The data for Russia are based on three Russian cities. The data for Turkey are based on currently married women.

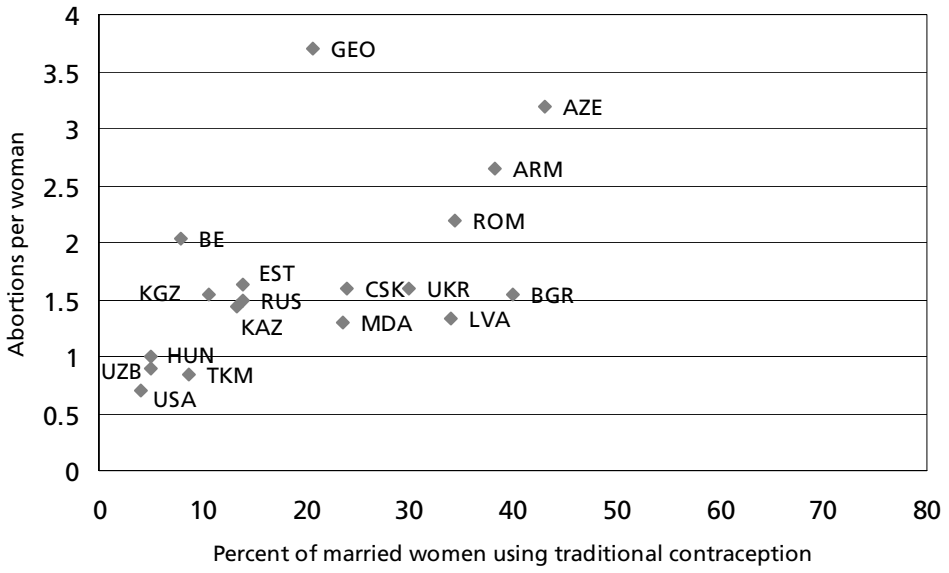
The association between the prevalence of modern contraception and abortion is displayed in Figure 2.3 for 17 countries in central Asia and eastern Europe, plus the United States. There is a very strong negative correlation (-.92) in the expected direction. However, when the prevalence of traditional methods is plotted with abortion rates across the 18 countries, the correlation becomes positive (+.55); the greater the use of such methods (with their higher failure rates), the higher the abortion rates (Figure 2.4).

Figure 2.3
Total abortion rate and the prevalence of modern contraceptive methods in 18 countries



ARM = Armenia AZE = Azerbaijan BLR = Belarus BGR = Bulgaria CSK = Czechoslovakia
EST = Estonia GEO = Georgia HUN = Hungary KAZ = Kazakhstan KGZ = Kyrgyz Rep.
LVA = Latvia MDA = Moldova ROM = Romania RUS = Russia TKM = Turkmenistan
UKR = Ukraine USA = United States UZB = Uzbekistan

Figure 2.4
Total abortion rate and the prevalence of traditional contraceptive methods in 18 countries



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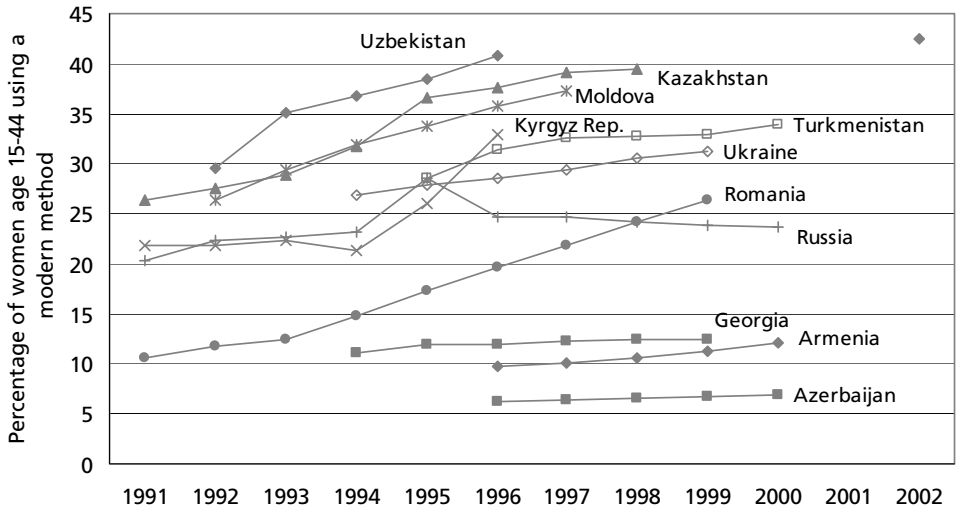
The recent trends in modern contraceptive prevalence (Figure 2.5) show a rise in all countries except Russia (Avdeev and Troitskaia, 1999; Avdeev, 2003), where the upward movement appears to level off after 1996. Some of these increases are quite dramatic, with prevalence rising 1 to 2 percentage points per year. There is some speculation that the plateau in Russia resulted from government concerns about low fertility, which translated into the Health Ministry abandoning its sex education plans and widespread layoffs in the Moscow offices of contraceptive manufacturers. Evidently, this reaction has subsided, and contraceptive sales have begun to increase again after 2000 (Ismailov, 2003; Bellaby, 2003). Aside from this, the plateau no doubt underestimates the increase in prevalence because the measure only includes the IUD and hormonal methods. In particular, surgical sterilization, which had been increasing, is excluded after 1997.

The recent trends in modern contraceptive prevalence show a rise in all countries except Russia, where the upward movement appears to level off after 1996.

Figure 2.5
Recent trends in the use of modern contraceptive methods



Note: The data for Russia are based on official statistics and are limited to IUD and pill use for women age 15-49.

It is possible to reconstruct the earlier trends in abortion for most of these countries over the past 20 years and to observe the patterns at different ages (Table 2.1). In Armenia, there has been a decline in abortion rates over the past 10 years for women age 20 to 29 and for a longer time among older women. In contrast, in Azerbaijan, abortion rates have increased at every age. The trend in Georgia is clearly upward for women under age 25 but downward for older women, at least in the preceding 10 years.

Table 2.1 Trends in abortion rates in 9 countries by age at time of abortion and number of years preceding survey that abortion took place

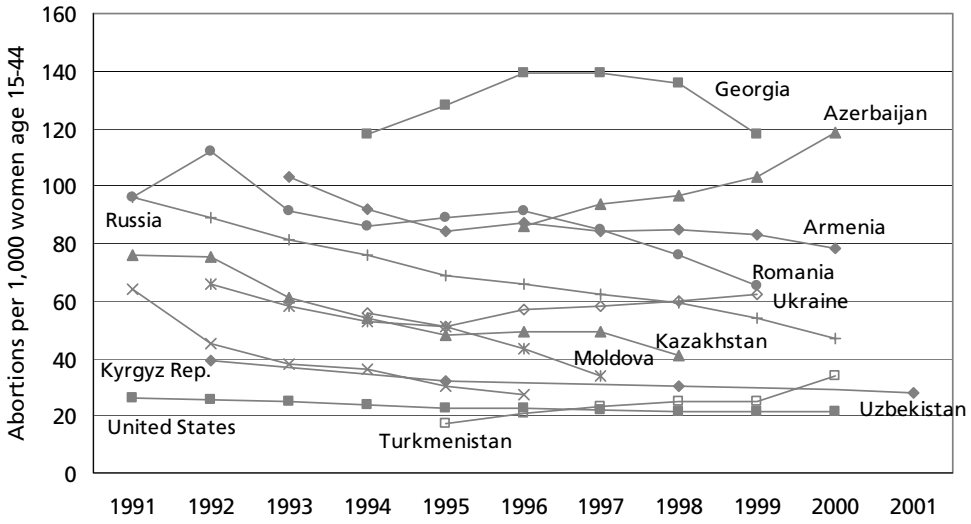
Age at Abortion	Number of years before the survey											
	Armenia 2000				Azerbaijan 2001				Georgia 1999			
	0–4	**5–9**	**10–4**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**
15–19	6	12	6	7	5	3	1	1	30	22	12	9
20–24	104	147	133	103	80	63	46	29	151	142	125	106
25–29	180	194	192	180	163	136	122	87	189	233	232	218
30–34	128	139	166	187	159	146	140		185	228	241	
35–39	84	83	132		125	113			125	177		
40–44	31	46			63				54			
	Kazakhstan 1999				Kyrgyz Republic 1999				Moldova 1997			
	0–4	**5–9**	**10–14**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**
15–19	12	19	15	9	6	9	4	3	14	12	12	8
20–24	68	84	100	101	62	42	50	52	73	97	89	85
25–29	81	88	131	142	68	77	75	96	77	91	100	102
30–34	60	79	84	110	77	77	77	96	44	63	82	
35–39	40	47	59		55	54	79		30	48		
40–44	19	20			22	28			17			
	Romania 1999				Turkmenistan 2000				Uzbekistan 1996			
	0–4	**5–9**	**10–14**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**	**0–4**	**5–9**	**10–14**	**15–19**
15–19	28	25	11	10	1	4	5	1	2	3	2	2
20–24	108	134	66	70	21	21	20	25	21	22	16	24
25–29	126	157	98	117	40	38	41	48	34	48	44	40
30–34	106	125	81		44	40	45	56	42	44	46	73
35–39	61	66			32	23	40		25	43	35	
40–44	24				18	9			20	30		

In Kazakhstan, the Kyrgyz Republic, and Moldova, abortion rates are mostly declining with exceptions at a few ages for younger women. In Romania, abortions were seriously underreported more than 10 years ago, when they had been illegal, but over the 10 years preceding the 1999 survey, there is a clear decline at every age above 19. There is little change in the past 15 years in Turkmenistan, but there are some indications of slight declines in Uzbekistan.

Trends in abortion rates over the past five or six years generally indicate a downward trajectory.

Trends in abortion rates over the past five or six years generally indicate a downward trajectory (Figure 2.6). There are several exceptions to this picture of declining abortion rates, which will be discussed below.

Figure 2.6
Recent trends in abortion rates



3

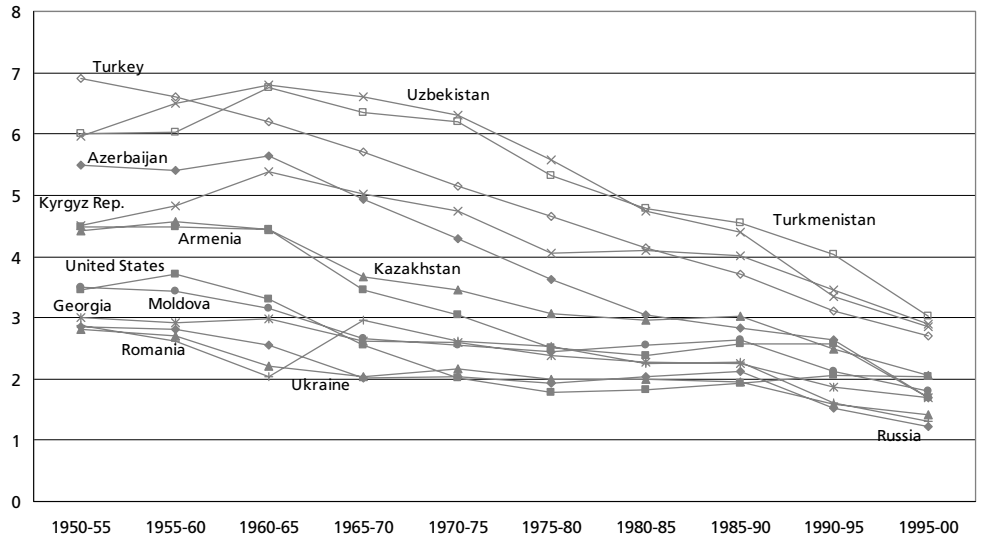
Trends in Fertility Rates and Number of Children Desired

To understand the prevalence of contraception and abortion, one must consider the number of children that couples want (Bongaarts and Westoff, 2000) The smaller the "fertility target" (desired number of children), the more likely it is that couples will practice some form of birth control. The alternative would be high levels of unwanted births and unmet need for family planning. If couples are aiming for only one or two children over a period of, say, 20 years, the long exposure to the risk of an unwanted pregnancy presents a considerable challenge to fertility regulation.

The smaller the "fertility target" (desired number of children), the more likely it is that couples will practice some form of birth control.

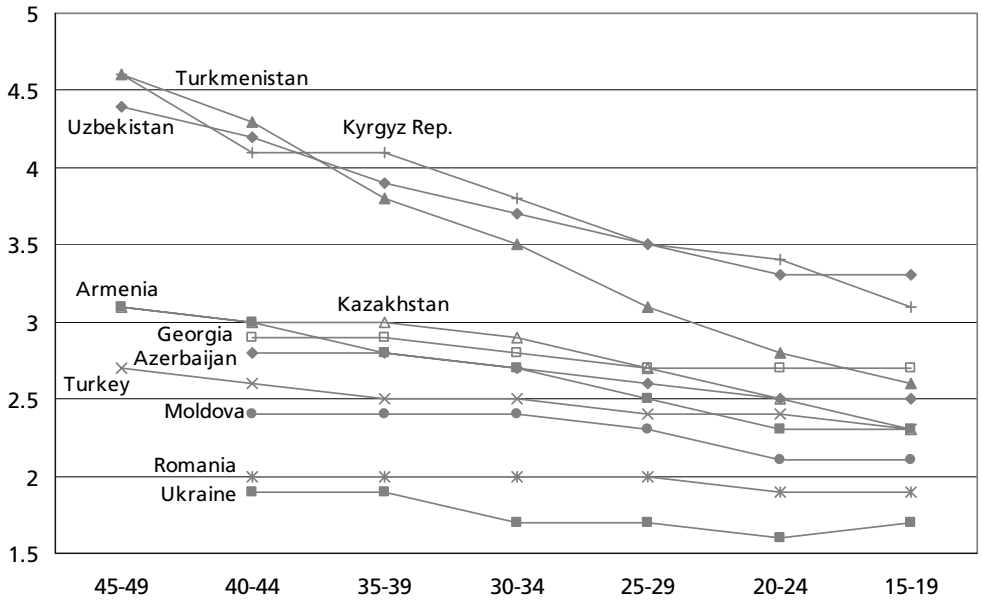
The trends in actual fertility (Figure 3.1) dramatically indicate the rapid emergence of the small-family norm in these 12 countries. In 7 of the 12, the total fertility rate has declined from a range of 3 to 5 births per woman in 1950-55 to between 1 and 2 births in 1995-2000; in the other 5 countries, the decline has been from between 4 and 7 births to between 2 and 3. These sharp declines are clear evidence that couples in these countries now prefer very few children. There is, of course, the possibility that the number of children preferred is greater than the observed fertility rates as a result of the postponement of births. Although it may be that couples prefer more children than they are having, it is also true that actual fertility rates may exceed the levels that would exist if only wanted births occurred.

Figure 3.1
Total fertility rates 1950-2000



Direct measures of these preferences are only available from estimates derived mostly from recent single surveys. An indirect approach to assessing time trends in reproductive preferences is shown in Figure 3.2, where the mean ideal number of children is tabulated by the current age of women. The assumption is that the ideal number reported by women in their 40s, compared with that reported by younger women, reveals a time trend in the norm. There are problems with such a measure, including the likely rationalization of unwanted births as wanted, but it is the only measure available. The progressive declines in the ideal number at each younger age category is clearly evident; it is especially pronounced for Turkmenistan, the Kyrgyz Republic, and Uzbekistan. In Turkmenistan, the ideal number reported by women age 45 to 49 is 4.6 children, in contrast to 2.6 by women age 15 to 19. All of the other countries show ideal numbers under 3 children, an average that reaches as low as 1.7 in Ukraine.

Figure 3.2
Mean ideal number of children, by current age of women



Note: The data for Turkey are based on currently married women.

The evidence both from recorded declines in total fertility rates and imputed declines in reproductive norms indicates that fertility goals have become smaller in recent years.

Thus, the evidence both from recorded declines in total fertility rates and imputed declines in reproductive norms indicates that fertility goals have become smaller in recent years. The implication is that the challenge to fertility control has become commensurately greater. As noted above, women in these countries who mostly want no more than two children are confronted with some 20 years of exposure to the risk of unwanted pregnancy.

In a similar analysis of the relation between abortion and contraceptive prevalence (involving some different countries), Marston and Cleland (2003) show for earlier periods that both abortion and contraception increased simultaneously if contraception was not able to satisfy the growing need for fertility control but that the inverse relationship described in this report eventually sets in.

4

Recent Country Trends in Contraceptive Prevalence and Abortion

The joint recent trends in abortion and modern contraceptive prevalence are depicted for each country in Figures 4.1. In Armenia, the use of modern contraceptive methods, which is very low, increased only from 10 to 12 percent over a five-year period. At the same time, the abortion rate declined moderately. In an earlier detailed examination of this relationship (Westoff et al., 2002), recent postponement of marriage was found to contribute to the decline in abortion. In Kazakhstan (Agadjanian, 2002; Westoff, 2000), the Kyrgyz Republic, Moldova, and Uzbekistan (Westoff et al., 1998), a stronger pattern emerges, with modern contraceptive prevalence rising and abortion declining both by about 50 percent. A similar pattern appears in Russia, where the use of the IUD and the pill increased by 74 percent between 1991 and 2001, while the abortion rate fell by 61 percent (Philipov et al., 2004). A recent reduction in abortion availability has been reported in Russia and is related to the government's exclusion of social factors as a basis for late abortion (Myers, 2003). The motivation is attributed to concerns about loss of population, the pressures of conservative lawmakers, and the growing influence of religious groups.

In Kazakhstan, the Kyrgyz Republic, Moldova, and Uzbekistan, a strong pattern emerges, with modern contraceptive prevalence rising and abortion declining both by about 50 percent.

Figure 4.1
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women

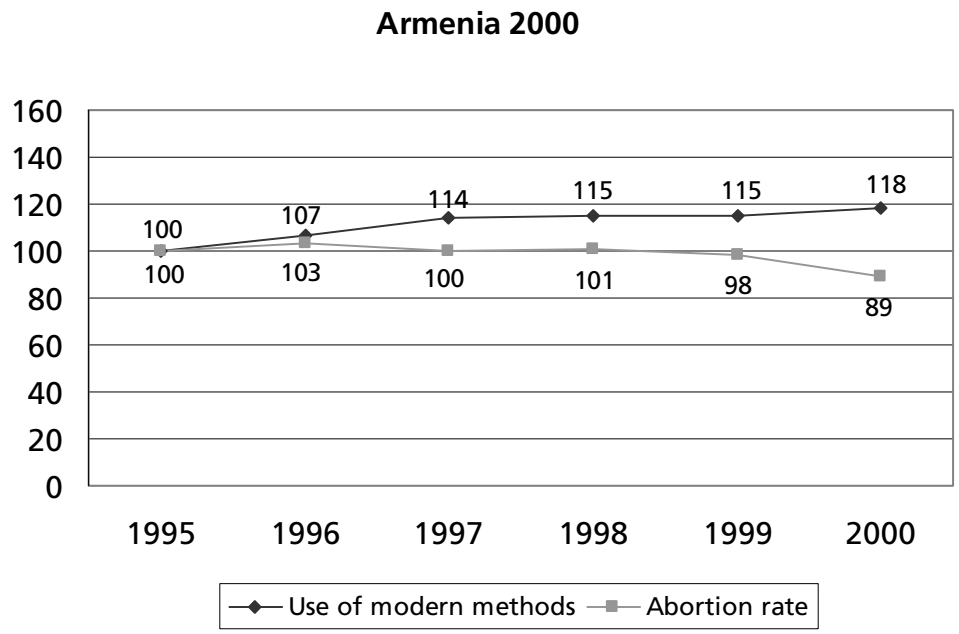
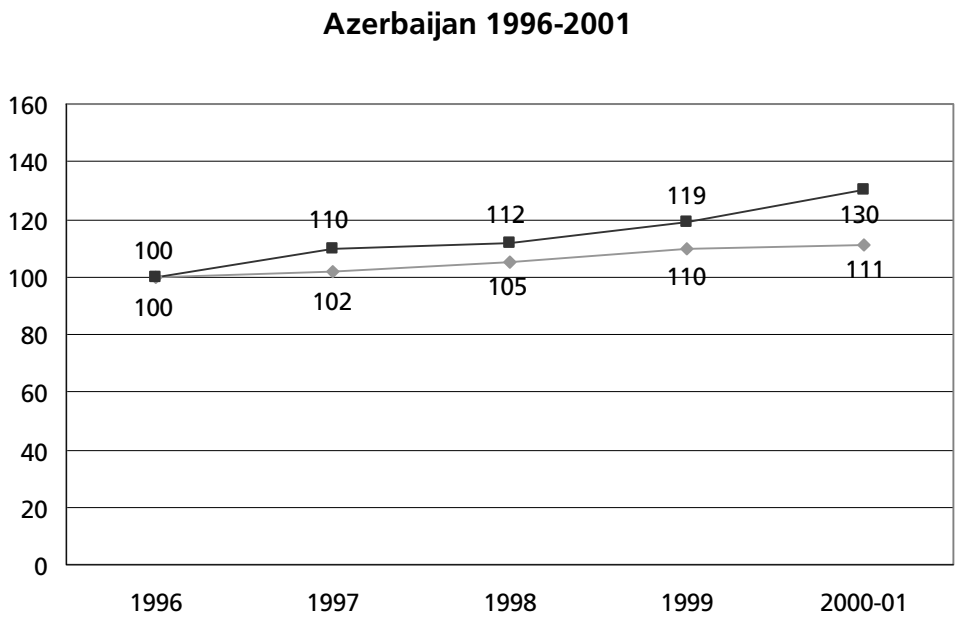


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women



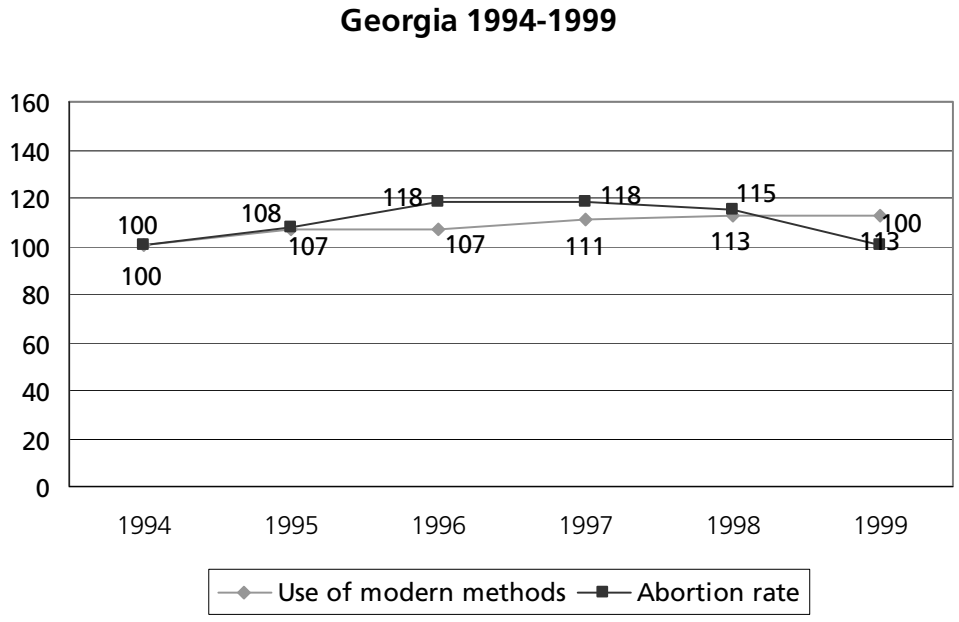
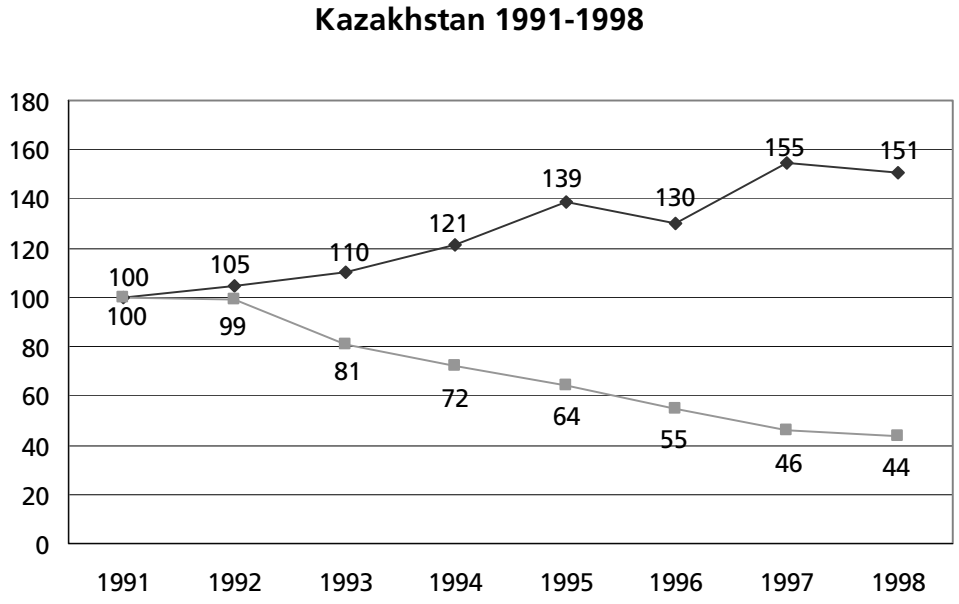


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women



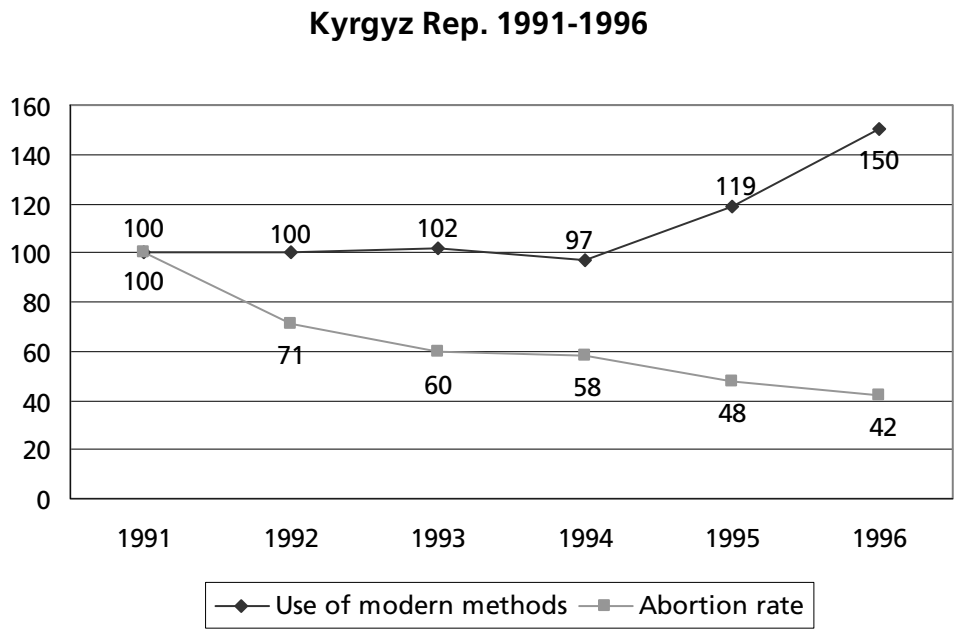


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women

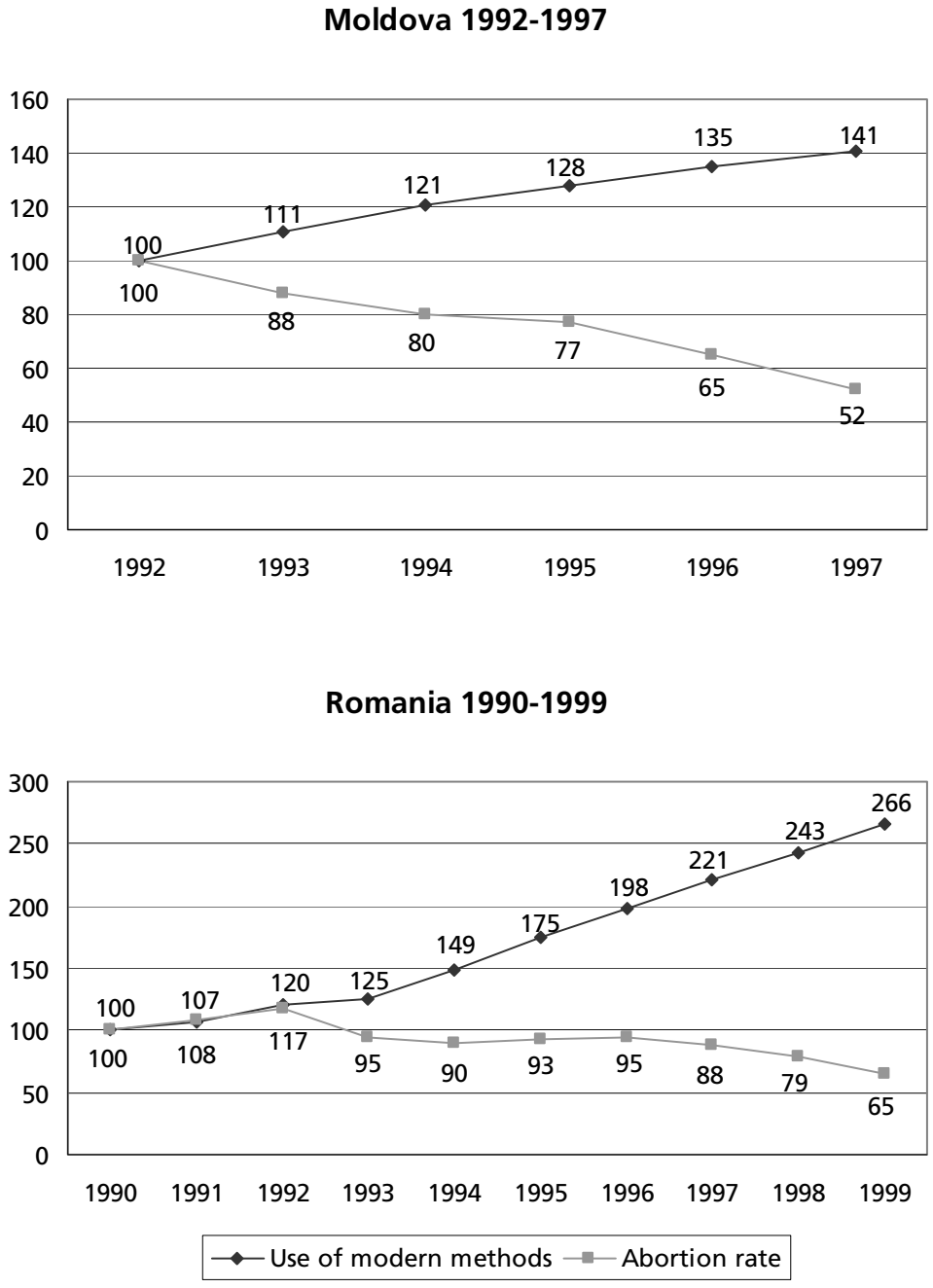


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women

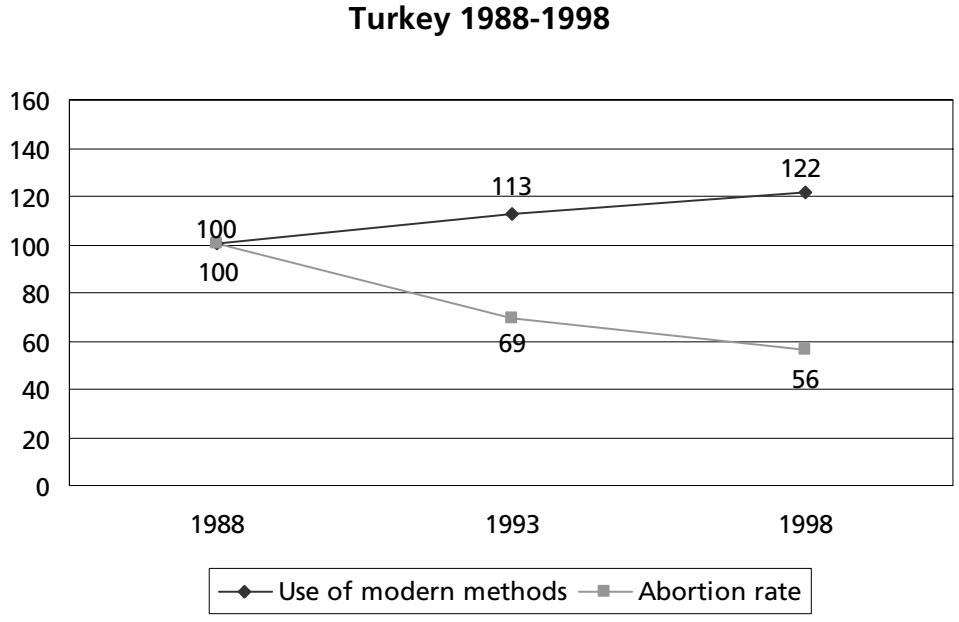


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women

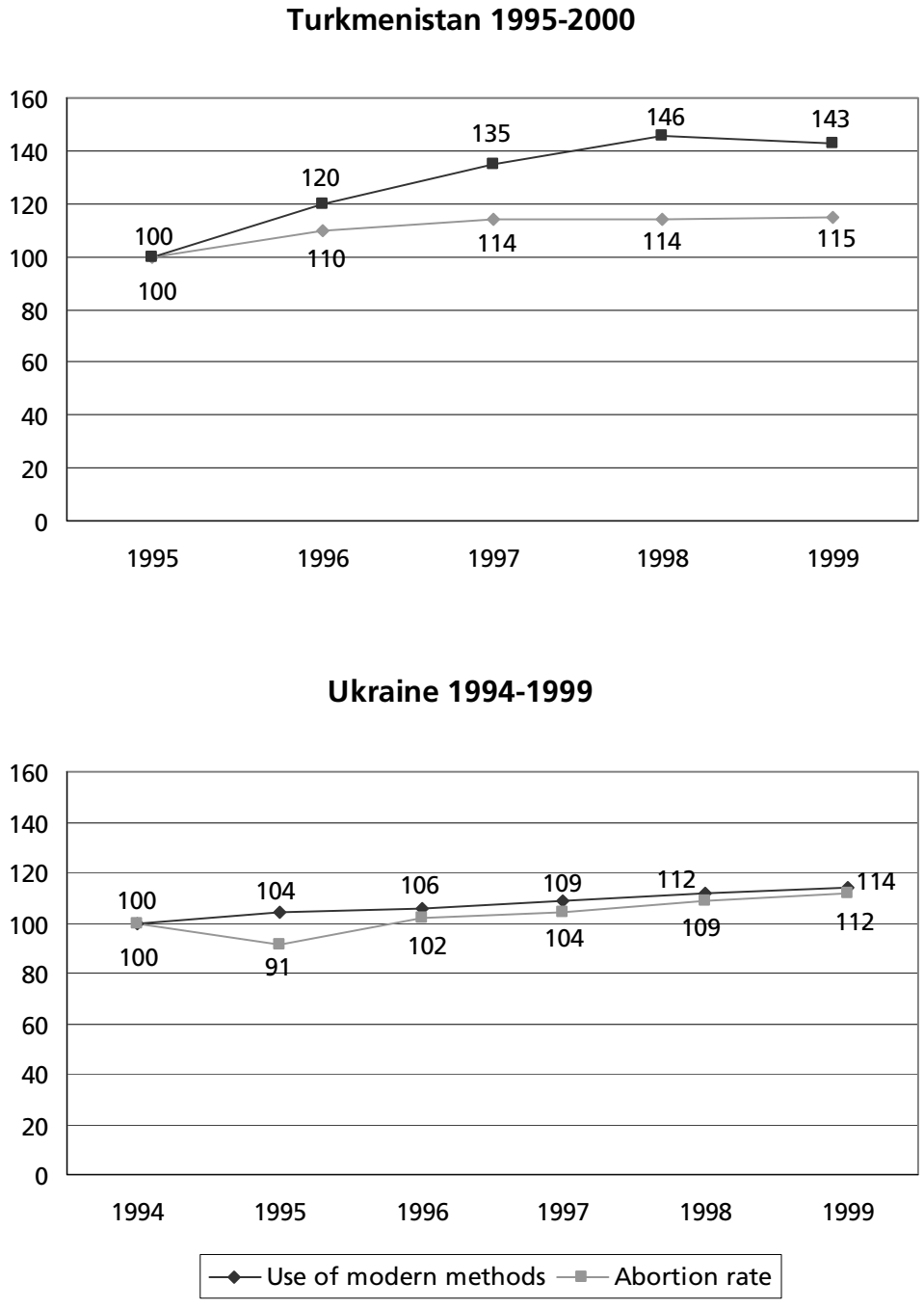
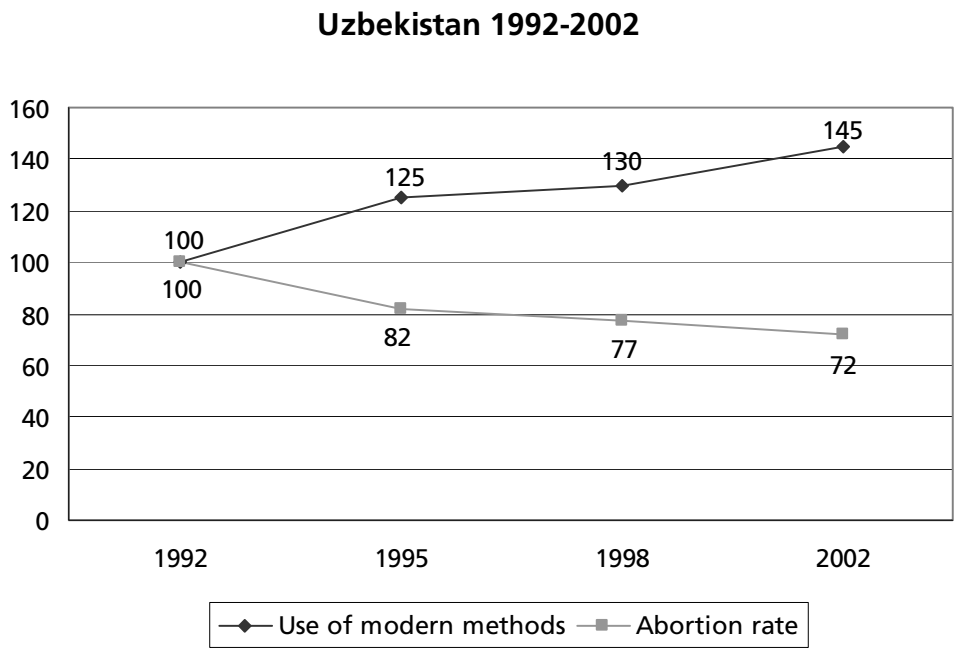


Figure 4.1 (Continued)
Recent trends (relative) in use of modern contraceptive methods and prevalence of abortion among all women



In Turkey, there has been a greater recent decline in the abortion rate than the increase in the use of modern contraceptive methods might imply (Senlet et al., 2001). Romania shows the most dramatic increase in the use of modern methods, with prevalence rising 2.5 times in ten years while the abortion rate dropped by a third.

There are three or four countries that do not show this pattern. In Georgia, the abortion rate in 1999 was the same as it was in 1994 (although in the interim it had increased and then decreased), while use of modern methods increased modestly to the current level of 12 percent (Figure 4.1). In effect, not much happened regarding levels of abortion or contraception over the five-year period. However, the proportion of pregnancies that were unintended increased from 58 percent in 1994 to 65 percent in 1999, a trend associated with the increase in contraceptive failure rates that included both modern and traditional methods (Figure 4.2). Part of the explanation for the increase in failure rates for modern methods was the increasing use of condoms and the decreasing use of the IUD. Also, it is possible that the addition of new users may have contributed to higher first-year failure rates. In summary, the increase in contraceptive failure offsets the increase in the prevalence of modern methods.

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Figure 4.2
Trends in annual contraceptive failure rates in five countries, 1992-1999

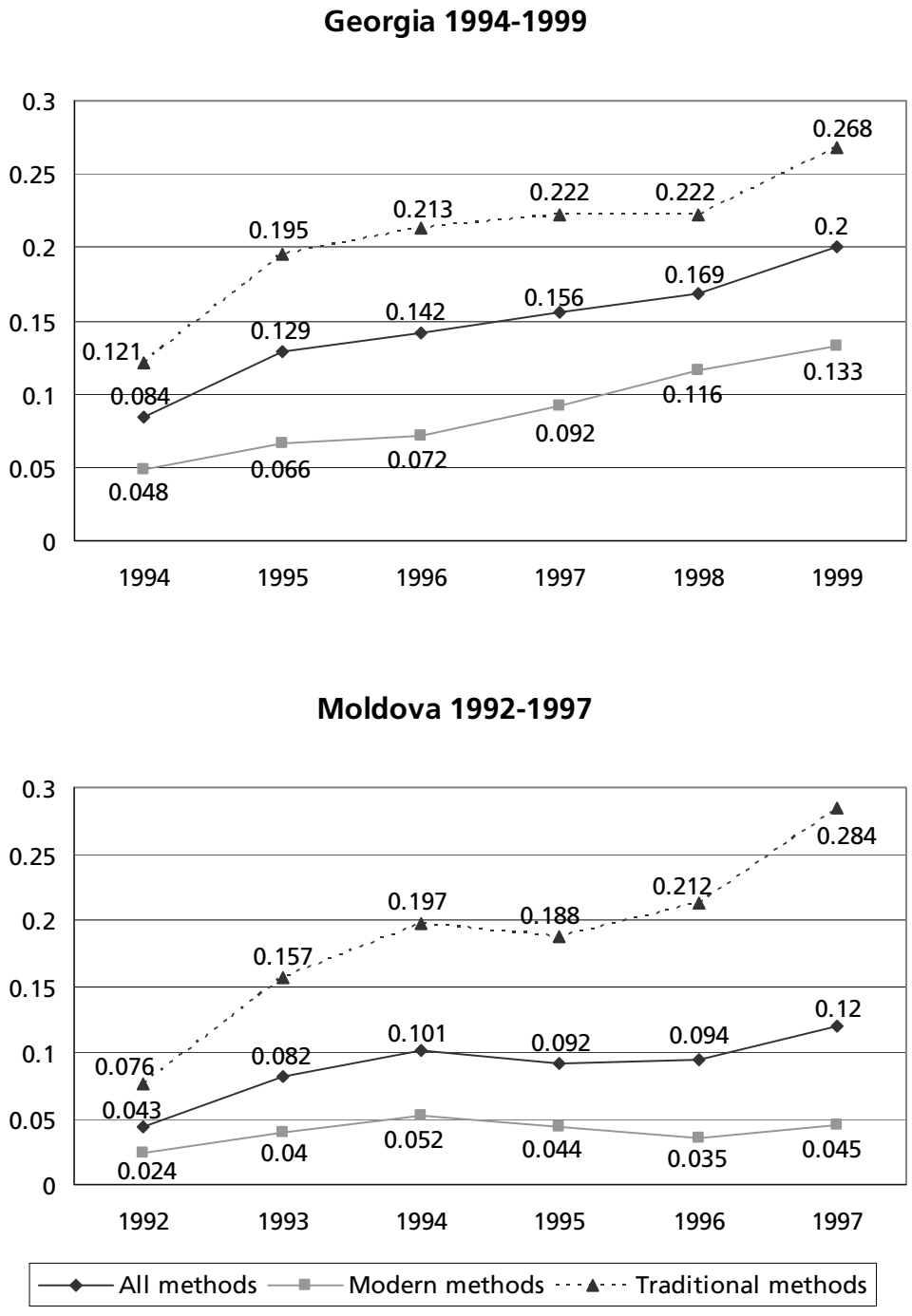
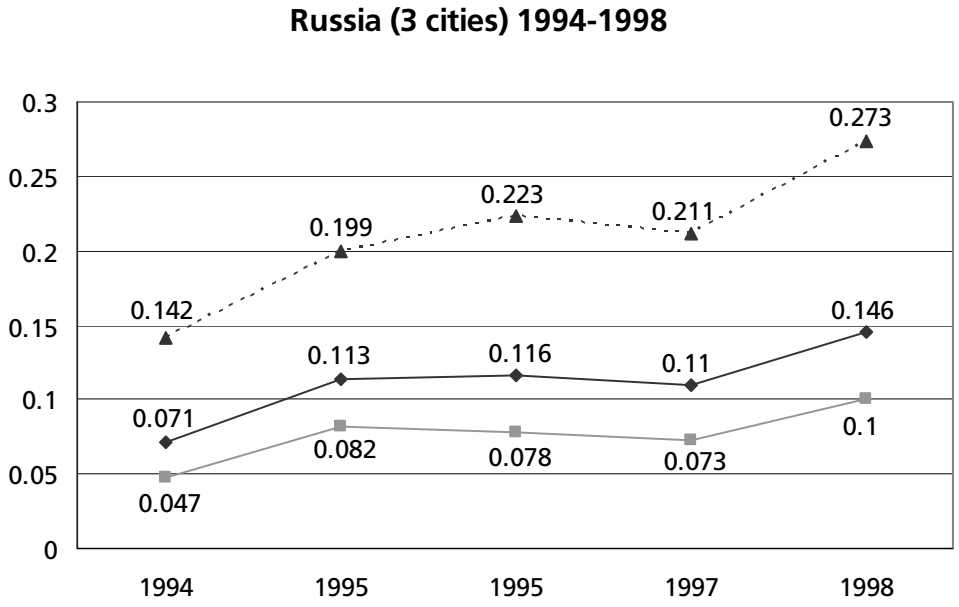


Figure 4.2 (Continued)
Trends in annual contraceptive failure rates in five countries, 1992-1999



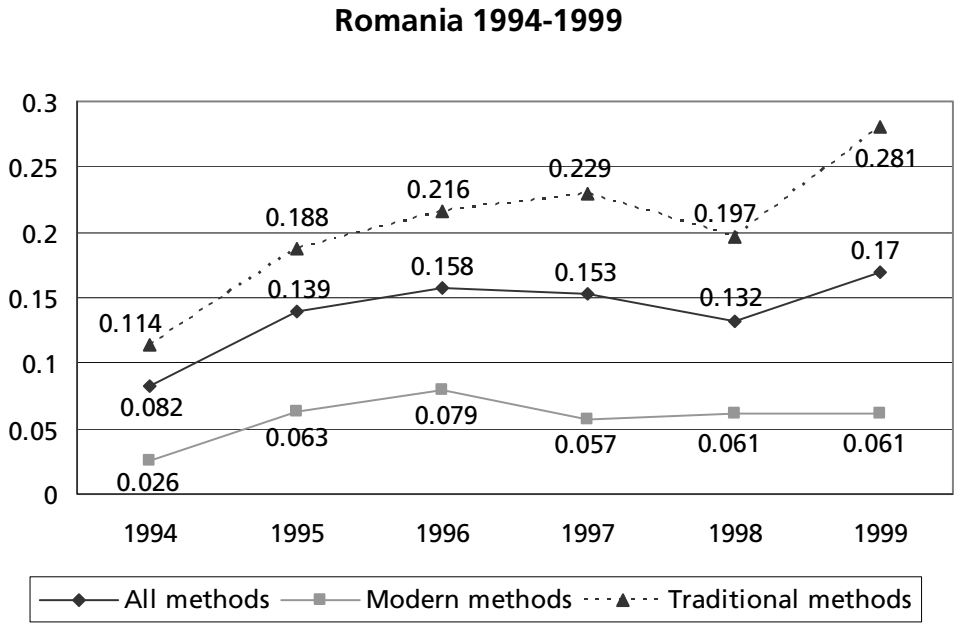
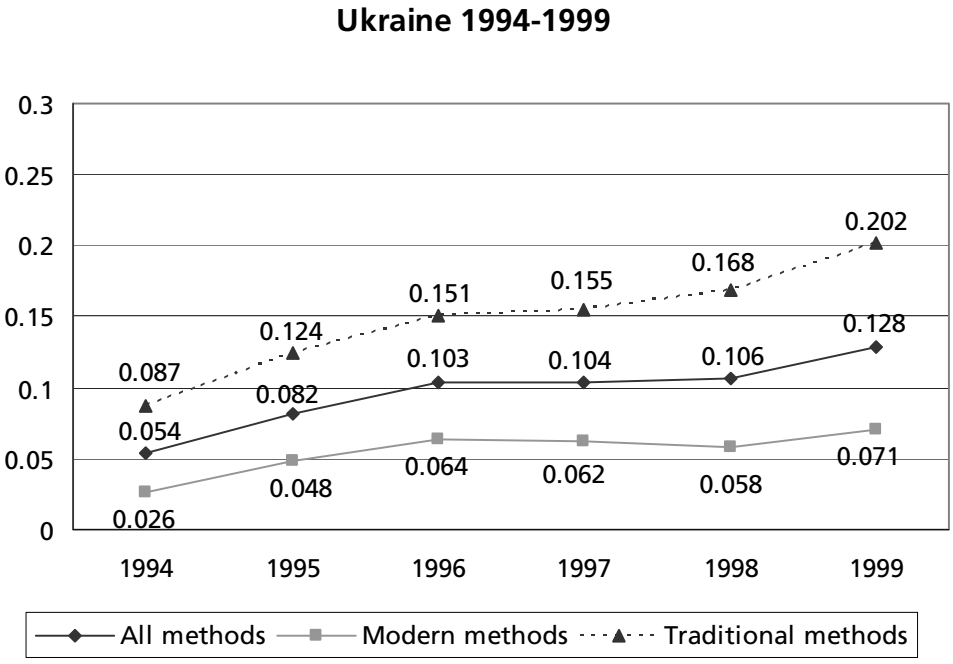


Figure 4.2 (Continued)
Trends in annual contraceptive failure rates in five countries, 1992-1999



Ukraine and Turkmenistan are exceptions to the widening gulf between abortion and modern contraceptive practice. In Ukraine, both types of fertility regulation increased slightly between 1994 and 1999. The prevalence of modern contraception in Ukraine is higher than in Georgia (31 percent compared with 12 percent), and the abortion rate is much lower (1.6 compared with 3.7). These two countries also differ substantially in the number of children women consider ideal. The range in Ukraine is between 1 and 2 children, while in Georgia the average is between 2.5 and 3.0. Ukraine has the lowest ideal family size of all of the countries and therefore the smallest fertility target. Like Georgian women, Ukrainian women show increasing contraceptive failure rates and increasing rates of unintended pregnancies (Figure 4.2).

Use of modern contraceptive methods in Azerbaijan (5 to 7 percent) is lower by far than in the other eleven countries.

In Turkmenistan, 34 percent of women are using modern contraceptive methods, up slightly from 31 percent five years earlier. The abortion rate is comparatively low (0.85 per woman), but it shows an increase in the recent past. The main hypothesis to explain the rise in abortion is that Turkmenistan has experienced the sharpest "decline" in the ideal number of children of all of the countries (Figure 3.2), from 4.6 for women age 45 to 49 to 2.6 for women age 15 to 19. Again, the fertility target has rapidly become smaller.

Azerbaijan has experienced a substantial increase in abortion in recent years, from a total abortion rate of 2.3 in 1994-96 to 3.2 in 1998-2001. This appears to be an example of the absence of any effect from the use of modern contraceptive methods. Use of modern contraceptive methods in Azerbaijan increased only from 5 to 7 percent and is lower by far than in the other eleven countries.

In summary, 8 of the 12 countries show declines in abortion accompanied by increases in the prevalence of modern methods; one shows an increase in abortion with little change in prevalence (Azerbaijan); two show increases in abortion along with an

increase in prevalence but with a substantial reduction in the ideal number of children (Turkmenistan) or a very low ideal number of children with increasing contraceptive failure rates (Ukraine); and one features no net change in abortion rates but with increasing contraceptive prevalence offset by increasing rates of contraceptive failure (Georgia).

5

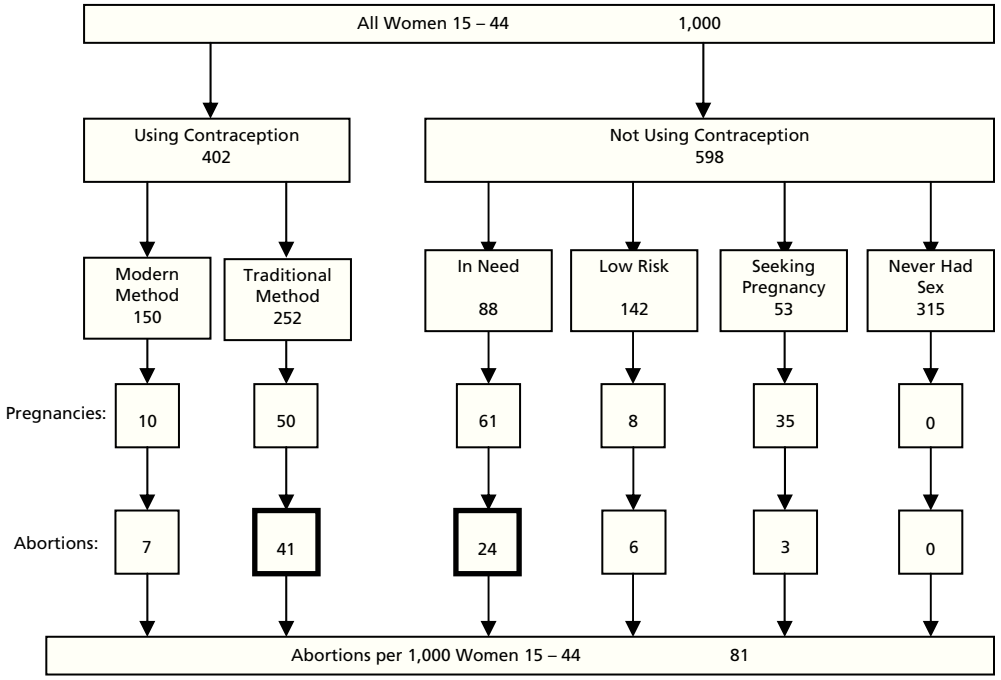
A Model of Abortion

Abortion is associated primarily with pregnancies resulting from contraceptive failure and pregnancies among women who did not use contraception even though they did not intend to become pregnant. The latter group constitutes the category, unmet need for family planning. In addition to the two main sources of abortion, other sources include women who thought they were not exposed to the risk of pregnancy (for reasons of low fecundability or limited sexual activity) and women who deliberately became pregnant but who experienced a change in circumstances.

To quantify the relative proportions of these components of the abortion rate, this report uses estimates of contraceptive failure rates, the prevalence of unmet need, low risk of pregnancy, and intentional pregnancy, along with the associated pregnancy and abortion rates for the 12 countries. In each country, the detailed components are estimated from monthly calendar data collected in the interviews. Figure 5.1 illustrates the approach with data from the 2000 survey in Armenia. The decomposition is evaluated by how closely the resulting abortion rate approximates the overall rate based on pregnancy histories.

The decomposition is evaluated by how closely the resulting abortion rate approximates the overall rate based on pregnancy histories.

Figure 5.1
A model of abortion (using Armenia 2000 data)



The total sample of women age 15 to 44 in Armenia is first divided into women using contraception (402 per 1,000 women) and those not currently using any method (598). The users are then divided into those using a modern method (150 per 1,000 women) and those using a traditional method (252). The observed annual failure rates associated with these categories are .070 and .198, respectively, yielding 10 and 50 unintentional pregnancies. Armenian women aborted 69 percent of pregnancies that were the result of failure with a modern method (7 abortions) and 83 percent of pregnancies associated with traditional method failures (41 abortions). Together, these resulted in 48 abortions associated with contraceptive failure. Reliance on traditional methods contributes disproportionately to the abortion rate in Armenia.

Reliance on traditional methods contributes disproportionately to the abortion rate in Armenia.

Armenian women not using any contraception (598 per 1,000 women) are divided into those with an unmet need for family planning (88), those at low risk of pregnancy because of low fecundity or little exposure to the risk of pregnancy (142), women seeking pregnancy or intentionally pregnant (53), and women who have never had sex (315). The latter group, consisting mainly of young unmarried women, obviously contributes no pregnancies or abortions. The main source of abortions among women not using any contraception is the relatively small group (88), classified in the unmet need category.[2] Their recent pregnancy rate was estimated at .638, with 43 percent aborting, yielding 61 pregnancies and 24 abortions.

[2] Unmet need was defined differently in the DHS and CDC programs. The estimates for the CDC surveys included here are modeled after the DHS algorithm with women who were unintentionally pregnant included in the unmet need category. Women who were pregnant intentionally are grouped with women seeking pregnancy.

The "low-risk" category (with 142 per 1,000 women) had an annual pregnancy rate estimated at .020, and contributed 6 abortions. The "seeking pregnancy" category (53 per 1,000 women) had a pregnancy rate of .662 and contributed 3 abortions. The sum of these abortions from each category is 81 per 1,000 women, which is the same as the rate calculated directly from the pregnancy history. Estimates for the parameters of abortion risk for each country are shown in Table 5.1.

Table 5.1 Model parameters for abortion risk among women age 15–44

Parameter	Armenia 2000	Azer-baijan 2001	Georgia 1999	Kazakh-stan 1999	Kyrgyz Rep. 1997	Moldova 1997	Romania 1999	Russia[1] 1999	Turkey[2] 1998	Turkmen-istan 2000	Ukraine 2001	Uzbek-istan 1996
Abortion												
Total abortion rate[3]	2.60	3.20	3.70	1.43	1.50	1.30	2.20	2.51	0.70	0.85	1.57	0.63
General abortion rate[3]	81	116	130	48	51	43	74	85	24	26	55	21
Users of contraception												
Percent using any method	40.1	32.4	24.8	49.0	43.1	54.4	48.2	60.1	66.6	39.8	53.5	39.7
Annual failure rate	.150	.283	.186	.063	.073	.088	.147	.118	.055	.030	.098	.023
Percent of failures aborted	80.7	74.2	90.3	83.3	71.3	56.9	69.3	63.7	36.1	43.9	61.7	66.7
Percent using modern method	15.0	7.0	12.2	39.4	35.6	37.4	23.4	44.4	40.2	34.5	31.2	36.8
Annual failure rate	.070	.122	.122	.036	.044	.038	.060	.077	.028	.021	.057	.020
Percent of failures aborted	68.6	75.9	89.4	86.3	69.5	61.6	72.3	68.4	38.1	50.0	62.7	66.7
Percent using traditional method	25.2	25.4	12.6	9.6	7.5	17.0	24.7	15.7	26.5	5.3	22.3	2.9
Annual failure rate	.198	.327	.248	.173	.210	.200	.222	.234	.095	.091	.148	.061
Percent of failures aborted	83.3	81.6	90.7	70.9	73.2	55.0	67.9	72.6	35.2	34.7	61.2	66.7
Nonusers of contraception												
Percent not using any method	59.8	67.6	75.2	51.0	56.9	45.6	51.8	39.9	33.4	60.2	46.5	60.3
Percent never had sex	31.5	36.2	33.1	21.8	22.5	18.8	18.3	8.5	na	33.2	13.7	26.0
Annual pregnancy rate4	.369	.476	.421	.339	.478	.359	.330	.348	.381	.415	.312	.487
Percent aborted	32.7	30.7	49.1	24.6	17.3	16.4	22.9	33.2	8.0	18.4	26.7	9.2
Unmet need												
Percent unmet need	10.3	7.9	15.9	7.6	7.6	6.4	7.3	9.9	12.3	6.9	11.1	10.1
Annual pregnancy rate	.638	.628	.649	.604	.675	.766	.596	.478	.651	.890	.305	.622
Percent of pregnancies aborted	43.2	60.0	67.6	33.2	45.0	24.2	40.1	63.6	10.0	25.0	52.8	20.0
Low risk												
Percent low risk	12.5	14.1	16.8	13.5	12.0	13.7	19.1	15.9	7.9	11.4	17.1	8.4
Annual pregnancy rate	.020	.086	.082	.063	.140	.078	.042	.046	.039	.044	.061	.113
Percent of pregnancies aborted	76.7	57.7	76.7	28.8	23.6	27.0	34.0	28.6	28.2	24.5	27.3	20.7
Seeking pregnancy[5]												
Percent seeking pregnancy	5.5	9.4	9.5	8.2	14.8	6.8	7.1	5.6	13.2	8.8	4.6	15.8
Annual pregnancy rate	.662	.747	.640	.697	.675	.542	.571	.624	.487	.891	.387	.622
Percent of pregnancies aborted	10.4	7.6	11.5	9.8	2.1	3.0	10.8	10.9	3.1	5.2	9.7	1.4

[1] Based on three Russian cities
[2] Based on currently married women
[3] Based on the three years preceding the survey
[4] For women who ever had sex
[5] Includes women intentionally pregnant

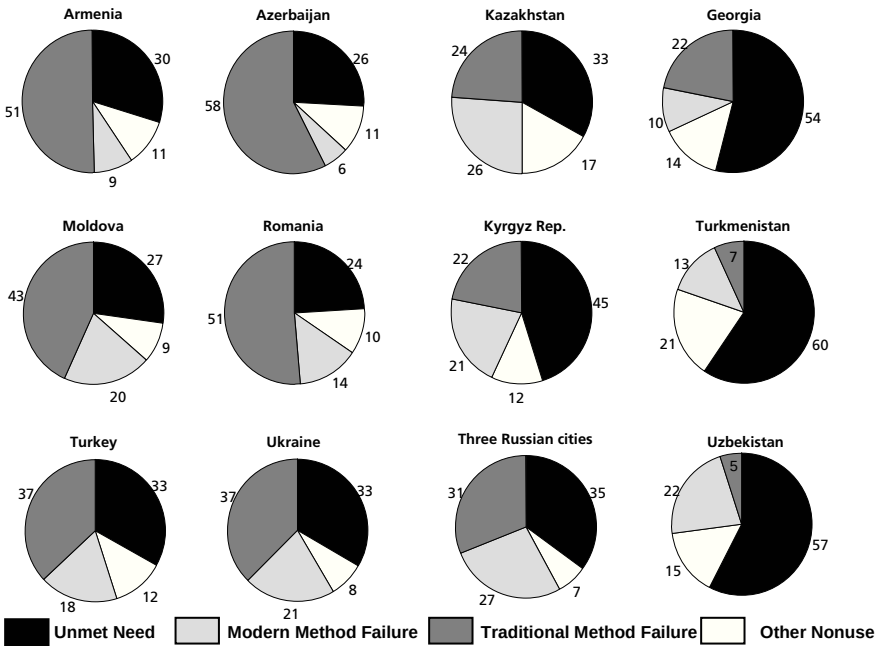
6

Components of Abortion

As indicated in the Armenia abortion model (Figure 5.1), most abortions are the result of contraceptive failure, particularly regarding use of traditional methods.

Among nonusers of contraception, unmet need is the main precursor to abortion, contributing 30 percent of all abortions in the Armenia example. The remaining 11 percent originated among other nonusers. The distribution of these categories for 12 countries is shown in Figure 6.1.

Figure 6.1
Components of abortion as a percentage of all abortions



The study countries form two groups: eight countries where the main source of abortion is contraceptive failure and four where the main source is unmet need. This difference is important programmatically. In the first group, the obvious need is to attract couples to methods with low failure rates; in the second category, the challenge is to provide family planning services. In both cases, there seems to be a potential demand to make available a greater diversity of modern methods to accommodate different preferences.

The study countries form two groups: eight countries where the main source of abortion is contraceptive failure and four where the main source is unmet need.

7

Potential Reductions in Abortion Rates

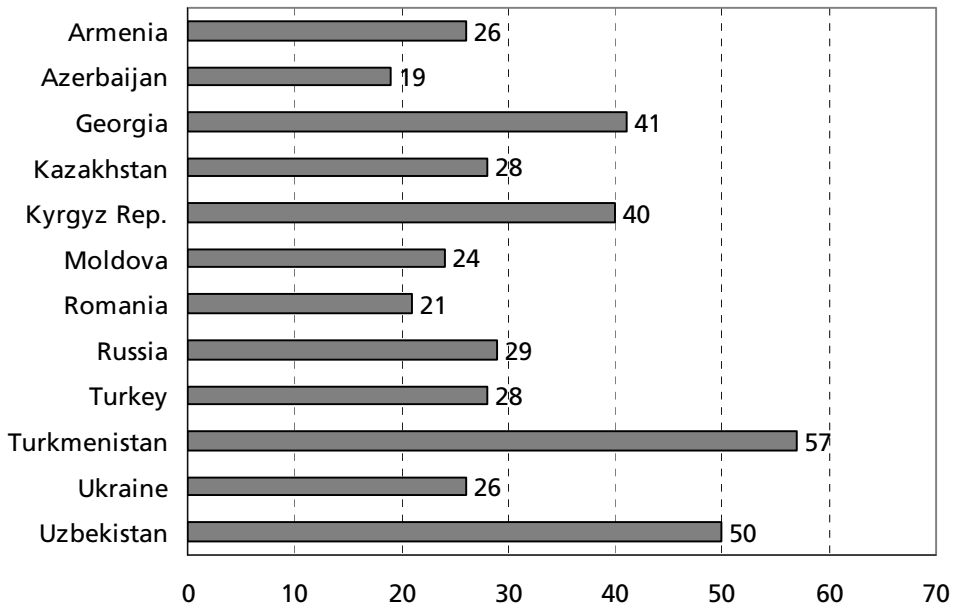
The model illustrated in Figure 5.1 permits the simulation of abortion rates under different assumptions about potential changes in the components.[3] Several simulations are presented.

7.1 Unmet Need Shifts to Use of Modern Methods

In this scenario, the assumption is that unmet need is reduced to zero as all women in this category adopt modern contraception. In effect, this is an increase in overall contraceptive prevalence with the further assumption that all of the increase is to modern methods. The implications of such a change for the reduction of abortion rates are illustrated in Figure 7.1 for each country. For most of the countries, the implied reduction in abortion levels is around 25 percent, with an overall average decline of 32

In this scenario, the assumption is that unmet need is reduced to zero as all women in this category adopt modern contraception.

Figure 7.1
Percent reduction in abortion rates if all unmet need shifted to modern methods



[3] The assumption is made in all of these hypothetical changes that the failure rates and propensities to abort for the women who move into the status would be the same as the prevailing rates in that category. For example, women who shift from the use of a traditional method to a modern method are assumed to practice their new method with the same efficacy as women already in that category.

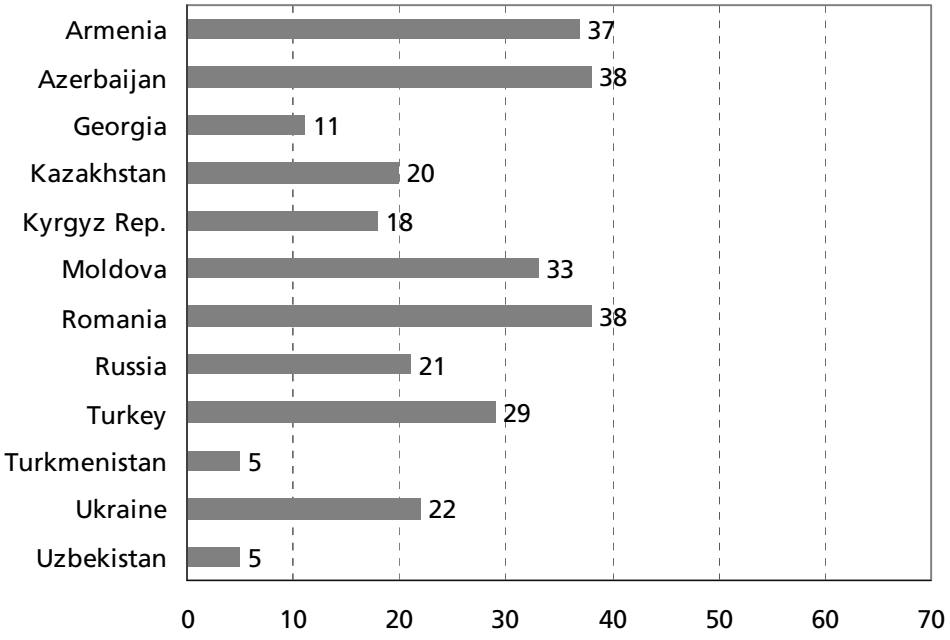
percent. In Turkmenistan and Uzbekistan, the effect would be greater (a reduction of around half) because in both of these countries the major source of the relatively low abortion rates is unmet need, with its high pregnancy rate.

7.2 Use of Traditional Methods Shifts to Use of Modern Methods

The greatest effects are estimated for Azerbaijan, Romania, and Armenia; the average reduction for all 12 countries is 23 percent.

Since traditional contraceptive methods have considerably higher failure rates than modern methods, there is the potential for a substantial reduction in unwanted pregnancies and abortions in a shift to modern methods. The numerical implications are shown in Figure 7.2. In this scenario, all of the other categories remain at the same level, including unmet need. The effect is equal to associating all current contraceptive use with the failure rate of the current users of modern methods in that country (reflecting both the mix of modern methods and their average failure rate) along with their propensity to have an abortion. The greatest effects are estimated for Azerbaijan, Romania, and Armenia; the average reduction for all 12 countries is 23 percent.

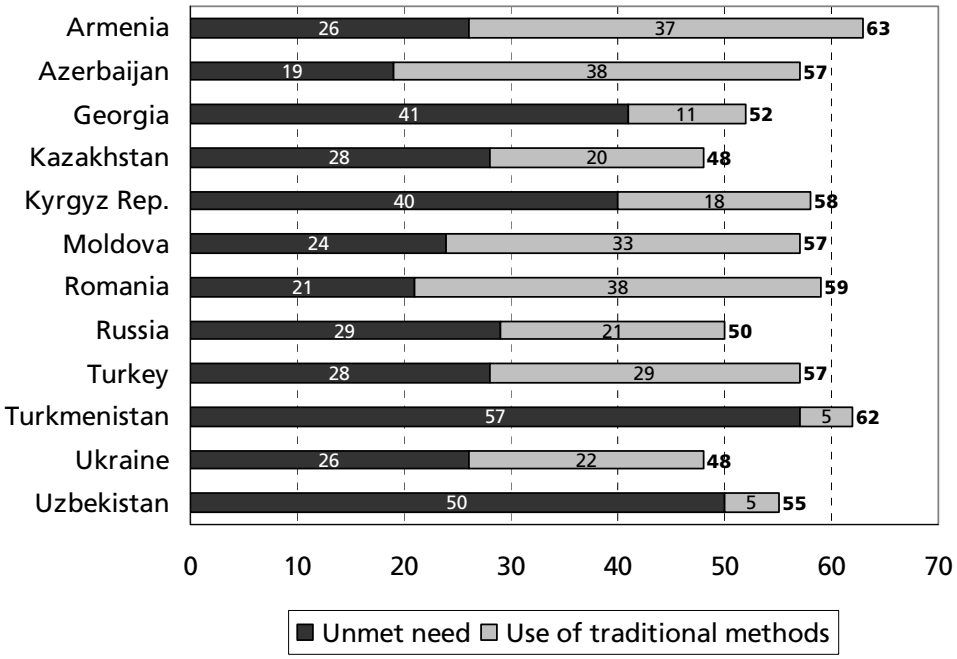
Figure 7.2
Percent reduction in abortion rates if use of traditional methods shifted to modern methods



7.3 Both Unmet Need and Use of Traditional Methods Shift to Use of Modern Methods

The potential combined effect on the abortion rate if all women shifted from the unmet need category and use of traditional methods to the use of modern methods is illustrated in Figure 7.3. The estimates are fairly uniform, ranging from reductions of 47 and 48 percent for Kazakhstan and Ukraine, respectively, to 63 percent for Armenia, with an average of 55 percent for the 12 countries.

Figure 7.3
Percent reduction in abortion rates if all unmet need and all use of traditional methods shifted to modern methods



8

Effect of Contraceptive Discontinuation on Abortion

Pregnancies can be classified by the pattern of contraceptive use prior to conception. As shown above, the major antecedents are nonuse of any method and contraceptive use that failed. A contraceptive method may also be discontinued either to become pregnant or for other reasons (e.g., side effects, health concerns, partner's objections). The focus here is on the last category of method discontinuation—pregnancy following discontinuation for reasons other than wanting to become pregnant. The frequency of such pregnancies (Table 8.1) ranges from 6 percent in Armenia to 20 percent in Georgia. In all eight countries in Table 8.1, the majority of such pregnancies end in abortion, although the magnitude of such abortions is far lower than the leading circumstances of either general nonuse of contraception or method failure. In Georgia, 18 percent of all (recent) pregnancies were terminated by abortion following this kind of method discontinuation, while twice as many pregnancies ended in abortion following simple nonuse. In a population where 64 percent of pregnancies end in abortion, this represents 28 percent of all abortions, the highest level among the eight countries.

The majority of pregnancies resulting from discontinuation of contraception for reasons other than wanting to get pregnant end in abortion.

Table 8.1 Percent distribution of all pregnancies that ended in the three years preceding the survey by use of contraception before pregnancy, and the percentage of pregnancies in each category that ended in abortion

	Armenia		Azerbaijan		Georgia		Kazakhstan		Moldova		Romania		Russian cities		Ukraine	
Use of contraception before pregnancy	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion	All pregnancies	Pregnancies ending in abortion
No method used	44.5	14.9	41.0	12.5	64.8	35.4	54.7	12.1	36.0	6.0	27.2	11.1	26.0	13.4	36.8	12.5
Method failed	42.6	34.2	39.8	34.4	10.2	9.5	20.9	14.0	35.6	24.4	46.3	33.7	43.0	33.7	38.1	26.1
Discontinued method:																
To get pregnant	6.8	0.2	9.3	1.1	5.5	1.1	12.0	0.6	20.4	1.2	14.7	1.3	14.7	1.8	15.6	1.4
Other reason	6.1	5.5	9.9	8.2	19.5	17.6	12.4	7.2	8.1	5.2	11.9	7.8	16.3	11.4	9.6	6.9
Total	100	54.8	100	56.2	100	63.6	100	33.9	100	36.8	100	53.9	100	60.3	100	46.9

9

Receptivity to Abortion

In the countries where attitudes toward abortion and contraception were assessed, women were generally seen to be opposed to abortion and to prefer contraception. However, attitudes toward different methods of contraception were mixed and far from enthusiastic. Moreover, knowledge of modern methods is limited in this part of the world. Even the pill is not known by a third of the women in half of the countries and ignorance of sterilization is widespread (Figure 9.1). The IUD is the most commonly known contraceptive method, followed by the condom.[4] Surgical sterilization of women is the least known of the four modern methods of contraception (knowledge of male sterilization is even lower). The high prevalence of traditional methods of contraception in some of these countries and the dominance of the IUD seems understandable.

Although declining, reliance on abortion in many of these countries is still high by international standards. This phenomenon is related to the limited knowledge of contraceptive methods in some countries. Although women say they much prefer contraception to abortion, there is a strong inclination to regard abortion as a solution to an unwanted pregnancy. One indicator of the propensity to rely on abortion is the high proportion of women who say that women who become pregnant unintentionally should seek an abortion. In Azerbaijan, Georgia, Moldova, and Romania, about two-thirds of the respondents said that women with an unwanted pregnancy should have an abortion rather than have the child or choose adoption (Figure 9.2). In four other countries, the question was more direct and asked the woman whether she personally would have an abortion if she became pregnant unintentionally. In Armenia, nearly two-thirds said they would have an abortion, and in Kazakhstan, the Kyrgyz Republic, and Turkmenistan, an average of 40 percent gave this response.

It seems clear that unless knowledge and availability of effective and acceptable contraceptive methods are increased, abortion rates will remain high in these countries.

It seems clear that unless knowledge and availability of effective and acceptable contraceptive methods are increased, abortion rates will remain high in these countries.

[4] These data may be out of date for a few countries where the surveys were conducted in 1996 and 1997.

Figure 9.1
Percentage of women who never heard of specific modern methods

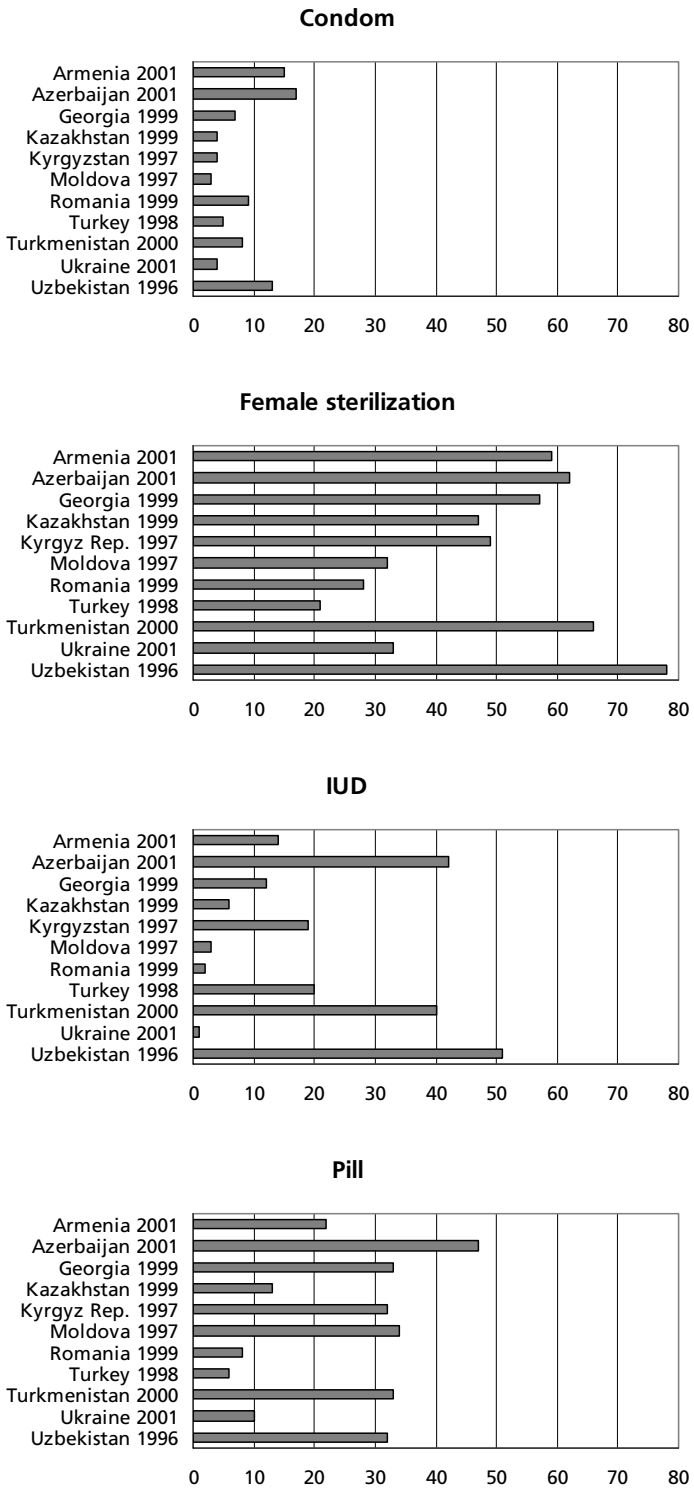
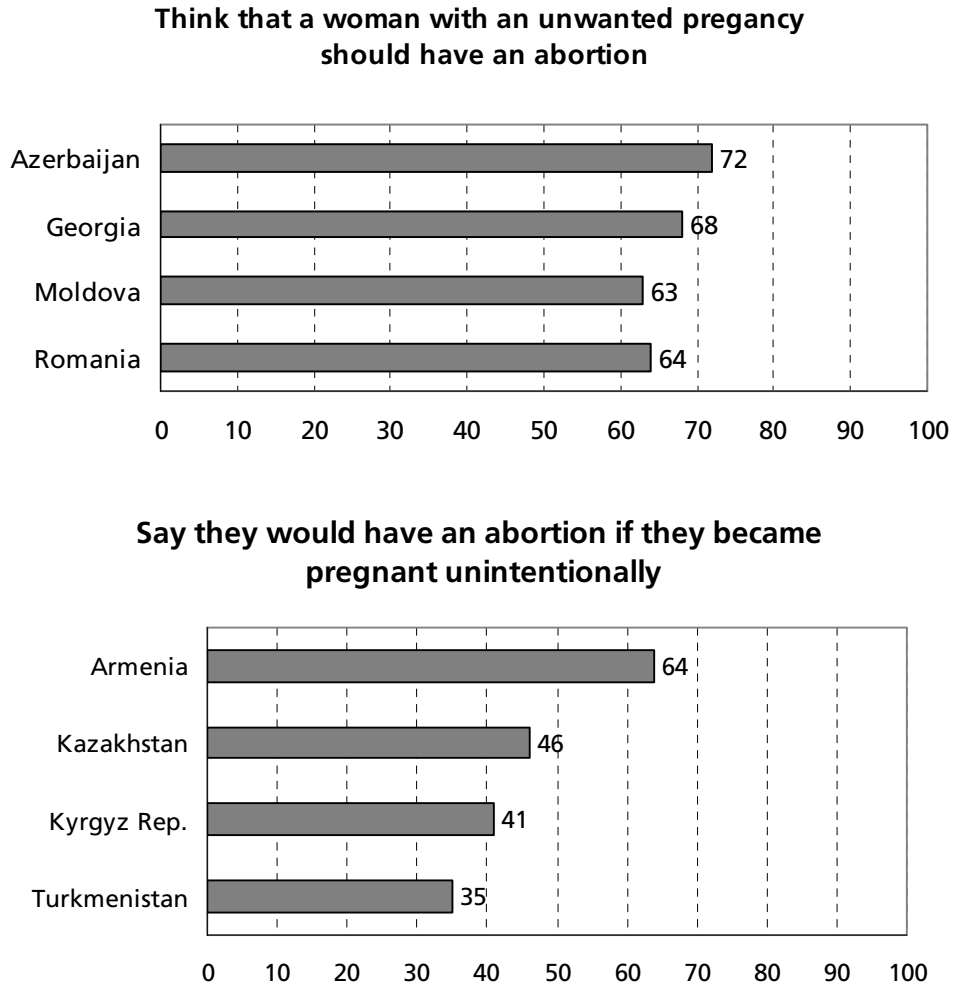


Figure 9.2
Percentage of women who think that a woman with an unwanted pregnancy should have an abortion, and percentage who say they would have an abortion if they become pregnant unintentionally



Note: The bottom graph includes half of the women who did not know how they felt or would act under the circumstances.

10

Covariates of Abortion and Contraception

In individual reports and in a summary document covering abortion and other reproductive topics in Eastern Europe and Eurasia (Centers for Disease Control and Prevention and ORC Macro, 2003), there are standard tables that examine the association between abortion and contraceptive practice, age, number of children, rural-urban residence, and education. The current analysis adds three dimensions to these analyses: 1) Do these variables relate to abortion and contraceptive behavior in the same way in all of the countries? 2) Are particular relationships independent of other covariates? For example, do residents of cities use abortion more than their rural counterparts, even when education and number of children are taken into account simultaneously? 3) What is the interaction between having an abortion and using contraception, again holding constant the other covariates? The current analysis also includes similar multivariate analyses of the covariates of attitudes toward abortion in the countries that included such questions in their surveys.

10.1 Abortion Experience

The odds ratios (logistic regression) of ever having had an abortion are shown for 12 countries in Table 10.1. The pattern for age is similar across countries and uniformly indicates a predictable increase with age: the older the woman, the more likely she is to have had an unintended pregnancy with an associated abortion.

Table 10.1 Odds ratios of ever having had an abortion, women age 15-44 who ever had sex

Variable	Armenia	Azer-baijan	Georgia	Kazakhstan	Kyrgyz Rep.	Moldova	Romania	Russia[1]	Turkey[2]	Turkmen-istan	Ukraine	Uzbeki-stan
Age (single years)	1.08	1.04	1.07	1.09	1.13	1.08	1.04	1.08	1.07	1.09	1.08	1.10
Number of children	2.53	2.34	2.45	ns	0.86	1.41	1.51	1.97	1.08	ns	1.26	ns
Residence												
Rural	1.00	1.00	1.00	1.00	1.00	1.00	1.00	na	1.00	1.00	1.00	1.00
Urban	ns	1.55	1.43	2.06	2.00	1.64	1.36	na	1.22	2.25	1.36	2.28
Education												
Less than primary	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary	1.38	1.27	ns	ns	0.72	ns	1.23	ns	ns	ns	ns	ns
Secondary	1.36	1.43	1.44	0.78	ns	ns	1.25	ns	ns	3.00	ns	2.20
More than secondary	1.39	ns	ns	0.69	ns	ns	ns	0.68	ns	2.68	0.65	1.80
Ever used modern method												
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.83	2.44	2.52	3.70	6.30	3.27	2.74	3.89	2.12	2.78	3.50	2.68
Number of women	3,882	5,540	5,765	3,832	2,716	4,694	5,890	6,004	6,151	4,613	5,046	2,997
Chi squared	1,156	1,565	1,580	702	641	1,009	689	1,933	809	596	732	440
R squared	.225	.206	.208	.132	.180	.155	.085	.234	.095	.115	.107	.149

[1] Based on three Russian cities
[2] Based on ever-married women
na = Not applicable
ns = Not statistically significant

The association of abortion with the number of living children a woman has is a particularly interesting variable. With age constant, and in the presence of the other covariates, the likelihood of having had an abortion is strongly associated with the number of children in most of the countries. The small number of children desired, and the motivation to prevent the birth of unwanted children, is undoubtedly the explanation.

Women who live in cities are more likely to have experienced an abortion than those in rural areas. The exception here is Armenia,[5] an anomaly previously discussed (Westoff et al., 2002), that can be traced to the greater reliance on traditional methods in rural areas of that country, which results in more unintended pregnancies and therefore more abortions. The reasons abortion rates are higher in cities include the proximity of medical facilities, greater desire for smaller families, and perhaps more secular attitudes toward the abortion procedure.

Abortion is strongly associated with whether a woman has ever used a modern method of contraception.

The association of abortion with education is more varied across countries. In five of the countries, there is evidence of a positive correlation, while in other countries, less educated women seem more likely to seek abortions. Given the mix of results, it is impossible to generalize about any universal relation between abortion and education. This is in sharp contrast to the pattern observed between education and the use of modern contraception (see below).

Abortion is strongly associated with whether a woman has ever used a modern method of contraception. In this measure, there is no information about whether that use preceded or followed the abortion, or both, but only whether the woman's history includes such use. Thus, the basis for the observed strong association can include past experience with contraceptive failure, the adoption of a contraceptive method after an

[5] The data for Russia are based on three cities, so the comparison could not be made.

abortion that did not include past use, or some combination of such circumstances. Overall, the association between abortion and contraceptive use reflects a motivation to control fertility.

10.2 Abortion Attitudes

In eight of the countries, a variety of attitudinal questions about abortion were included, although the wording of the questions was different in the CDC and DHS interviews. The responses to one question seem to be the most revealing. In the CDC interview, the phrasing of the question was: "If a woman had an unwanted pregnancy what should she do?" Three possible responses were read to the respondent: 1) Have the baby and keep it; 2) Have the baby and give it up for adoption; and 3) Have an abortion. In the DHS interview, the question was more direct and read, "Would you have an abortion if you unintentionally became pregnant sometime in the future?" with Yes, No, and Don't Know responses coded.

The same covariates in the multivariate analysis of whether a woman ever had an abortion are included in a similar analysis of these attitudinal data—the propensity to have an abortion as indicated by whether a woman would have an abortion if confronted with an unwanted pregnancy. The main predictor of such a propensity is whether the woman has ever had an abortion (Table 10.2). In all eight countries, past experience with abortion relates strongly to the option of abortion in the future. Women with abortion experience are two to six times more likely to choose an abortion under this circumstance than are women who have never had an abortion. In most countries, experience with the use of modern contraceptive methods also relates positively to the likelihood of having an abortion.

Past experience with abortion relates strongly to the option of abortion in the future.

Table 10.2 Odds ratios of women preferring an abortion if they become pregnant unintentionally

Variable	Armenia	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Rep.	Moldova	Romania	Turkmenistan
Age (single years)	ns	0.99	ns	1.03	ns	0.99	0.99	1.01
Number of children	1.51	1.16	1.11	ns	1.31	ns	1.16	1.07
Residence								
Rural	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Urban	0.73	ns	ns	1.60	1.44	1.61	1.39	1.49
Education								
Less than primary	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary	1.26	ns	1.41	ns	0.73	ns	ns	ns
Secondary	1.75	1.25	1.32	ns	ns	1.30	1.19	1.95
More than secondary	1.42	1.47	ns	ns	ns	1.32	1.38	2.34
Ever used modern method								
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.24	ns	ns	1.48	1.32	1.99	1.85	1.37
Ever had abortion								
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	3.93	2.38	2.98	3.08	3.09	2.39	3.25	6.46
Number of women	4,017	7,297	7,598	3,206	2,877	5,327	6,275	4,664
Chi squared	981	340	567	505	543	544	683	948
R squared	.195	.042	.061	.114	.144	.077	.081	.160

ns = Not statistically significant

Age does not appear important in determining this attitude, but in most of the countries the number of children does correlate directly with propensity to have an abortion. Urban residence also shows a relationship in five of the countries, and education likewise correlates directly with this attitude in five countries.

10.3 Modern Contraceptive Practice

Women's age operates in the opposite direction for use of modern contraceptive methods as it does for use of abortion (Table 10.3). Despite definition of the contraception variable as "ever having used a modern method," the age pattern for contraception indicates that the younger generation is more apt to be drawn to such practice. On the other hand, the number of children is directly correlated with modern method use as it is with abortion, no doubt for similar reasons. Women who have had an abortion are much more likely to use modern contraceptive methods, an association seen above in the reverse association of contraception with abortion.

Both urban residence and education are directly associated with experience with modern contraceptive methods.

Both urban residence and education are directly associated with experience with modern contraceptive methods. In both cases, the associations are strong and consistent across countries.

Table 10.3 Odds ratios of ever having used a modern method of contraception, women age 15-44 who have ever had sex

Variable	Armenia	Azerbaijan	Georgia	Kazakh-stan	Kyrgyz Rep.	Moldova	Romania	Russia[1]	Turkey[2]	Ukraine	Uzbekistan
Age (single years)	0.97	0.98	0.97	0.97	0.98	0.97	0.94	0.97	1.02	0.97	ns
Number of children	1.43	1.43	1.30	1.52	1.92	1.73	1.53	2.37	1.26	ns	1.66
Residence											
Rural	1.00	1.00	1.00	1.00	1.00	1.00	1.00	na	1.00	1.00	1.00
Urban	1.33	1.99	1.60	1.59	2.08	2.50	1.35	na	1.40	2.17	1.40
Education											
Less than primary	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary	1.60	1.26	2.17	1.29	ns	1.33	2.48	2.91	2.73	ns	1.33
Secondary	2.10	2.01	3.04	1.44	1.69	2.18	4.16	5.24	5.02	1.54	1.72
More than secondary	2.95	3.25	5.44	2.31	2.23	3.17	12.63	9.34	9.83	2.53	1.93
Ever had abortion											
No	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.93	2.51	2.69	3.48	5.27	3.13	2.62	3.57	2.07	3.46	2.50
Number of women	3,882	5,540	5,765	3,832	2,716	4,694	5,890	6,004	6,151	5,046	2,997
Chi squared	310	726	704	365	664	784	429	1180	717	571	526
R squared	.058	.105	.093	.095	.211	.137	.110	.201	.091	.095	.134

[1] Based on three Russian cities
[2] Based on ever-married women
na = Not applicable
ns = Not statistically significant

11

Remaining High Risk of Abortion

High levels of risk for abortion remain in the four countries with the highest overall rates of abortion: Armenia, Azerbaijan, Georgia, and Romania. High risk is defined here as women who are married, who want no more children, who are not using a modern method of contraception, who are at risk of an unwanted pregnancy (sexually active and fecund), *and* whose last pregnancy ended in abortion. The magnitude of this high risk in the four countries ranges from 12 percent in Romania to 27 percent in Armenia (Table 11.1). By definition, all of these women have already had at least one abortion (associated with their last pregnancy). Without the criterion that the women terminated their last pregnancy with abortion, the levels of risk range from 27 to 47 percent.

The magnitude of the remaining high risk for abortion in the four countries ranges from 12 percent in Romania to 27 percent in Armenia.

Table 11.1 Estimates of the percentage of currently married women who are at high risk for another abortion

Criterion	Armenia	Azerbaijan	Georgia	Romania
Currently married women who:				
Want no more children	72	70	58	59
And are not using a modern method	58	61	34	48
And are at risk of an unwanted pregnancy	43	47	29	27
And whose last pregnancy ended in abortion	27	19	20	12

12

Conclusions

The main conclusion of this report is that there is increasing international data indicating that use of modern contraceptive methods reduces the occurrence of abortion. With few exceptions, the countries reviewed here that experienced recent increases in the use of modern methods also experienced significant declines in abortion. Despite declining abortion rates, all 12 countries showed substantial reductions during the 1990s in both fertility and the number of children desired, which demonstrates the increasing role of modern methods of contraception. In contrast, use of traditional methods is associated with higher rates of abortion.

With few exceptions, the countries reviewed here that experienced recent increases in the use of modern methods also experienced significant declines in abortion.

Abortion is associated primarily with contraceptive failure and unmet need for family planning. Contraceptive failure accounts for most of the abortions in two-thirds of the countries, and unmet need accounts for the other one-third. Most of the contraceptive failures result from use of traditional methods. Discontinuation of contraceptive use for reasons other than failure or intention to become pregnant also contributes to abortion but in a more minor way.

On the basis of observed failure rates for the two types of methods and pregnancy rates for the different types of nonuse, as well as the associated abortion rates for each of these categories, a series of simulation models were developed to illustrate the potential further declines in abortion rates that could be expected if conditions changed. One simulation indicates that if all of the women currently classified with unmet need or using traditional methods were to join the women using modern methods, the abortion rate could be reduced by an average of 55 percent. Other simulations isolated the effects of traditional method use and unmet need separately.

Contraceptive failure accounts for most of the abortions in two-thirds of the countries, and unmet need accounts for the other one-third.

Despite an overwhelming preference for contraception over abortion, about half to two-thirds of the women say that they would opt for an abortion if they became pregnant unintentionally. There remains, however, a considerable amount of ignorance about modern methods other than the IUD, the most commonly used method. Given the widespread continuing decline in the number of children desired, there will be upward pressure on abortion if the use of modern contraceptive methods does not increase. There are four countries in the group where women remain at high risk for abortion: Armenia, Azerbaijan, Georgia, and Romania.

Given the widespread continuing decline in the number of children desired, there will be upward pressure on abortion if the use of modern contraceptive methods does not increase.

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