EPC 2010

Abortion and Contraception in a Low Fertility Setting: The Role of Seasonal Labor Migration

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Abstract

Despite increased availability of contraception, abortion remains a primary form of fertility regulation in much of the former Soviet Union. At the same time, many of post-Soviet countries continue to have high levels of seasonal international labor migration. This study examines the role of male seasonal labor migration in shaping pregnancy outcomes among non-migrant women in rural Armenia, a high out-migration, high abortion, low contraception, and low fertility setting. Applying random intercept logistic regression we found that women married to migrants are less likely to use long-term contraception than women married to non-migrants. The findings also show that migrants' partners are not significantly more likely to terminate their pregnancies through abortions than non-migrants' partners. The lower use of contraception is probably leveled off by less frequent intercourse among migrants' partners, leaving them with equal chances of having an unwanted pregnancy as non-migrants' partners.

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Background and conceptual framework

The literature on fertility, contraception, and abortion in low-fertility settings, such as those in much of the former Soviet Union, typically overlooks the role of massive population movement that the dissolution of the U.S.S.R has triggered or amplified. Yet, studies in other settings have shown that migration may have strong disruptive effects on fertility in sending areas. More specifically, seasonal and short-term migration has been shown to affect timing and spacing of births in communities from which migrants originate (Agadjanian, Yabiku and Cau, 2007; Lindstrom and Saucedo, 2007; Lindstrom and Saucedo, 2002; Massey and Mullman, 1984; Millman and Potter, 1984; Chen et al., 1974). Spousal separation and related decrease in intercourse and therefore to exposure to conception was said to lead to lower fertility of migrants' partners (Massey and Mullman, 1984).

The disruption of normal frequency of intercourse between spouses may in turn affect the patterns of contraceptive use among women left behind. Women with migrant husband often report lower use of long-term contraceptive methods than women with non-migrant partners (Kaufman, 1998). Migrants' partners may feel that contraceptives are not necessary because of the limited exposure to the risk of conception; however, they may also have less power in negotiating contraceptive use compared to non-migrants' partners. For example, research on the effects of migration on sexual health of those left behind has shown that women married to migrants in South Africa had higher risks of STDs as a result of reduced power for sexual

negotiation, especially in cases of longer separation. Hughes, Hoyo and Puoane (2006) found that women who saw their husbands less frequently were less likely to communicate with them about STDs, HIV and contraception. As a result of irregularity of sexual contact between the spouses, women with migrant husbands mostly rely on condoms and withdrawal as means of protection from pregnancy. However, in many developing countries condom availability and acceptability is still very low, leaving withdrawal as the main method of protection from pregnancy.

Lower use of modern contraceptives leads to higher rates of unwanted pregnancies, thus increasing the rates of induced abortions. In the countries where there are no legal and moral costs attached to terminating pregnancies, abortion remains as one of the cheapest and most popular methods of birth control. Moreover, in the settings with low fertility rates, abortions can guarantee achieving preferred sex composition of children (Attané, 2006; Meslé, Vallin, and Badurashvili, 2007).

Although the literature has addressed the associations between seasonal migration and contraceptive use, the effects of migration on abortion remain understudied. Moreover, research on migration and reproductive outcomes is mostly focused on high-fertility context. The choice of the setting for this study—rural Armenia—extends the research on migration and reproductive outcomes to low-fertility and high-migration contexts.

The setting: Armenia, a nation of three million people and a Gross National Income per capita estimated at $2,640 (World Bank, 2008), gained independence after the dissolution of the USSR in 1991. The collapse of the Soviet rule and the war with neighboring Azerbaijan in the early 1990s led in a severe socioeconomic crisis that affected the migration patterns and scope.

Seasonal labor migration to Russia and other parts of the Soviet Union, popularly known as khopan, was common in Armenia even before its independence, but the hardships of the early 1990s largely replaced it with massive permanent emigration (Yeganyan and Shahnazaryan, 2004; Poghosyan, 2003). It is estimated that since the dissolution of the USSR about 15% of the Armenian population left the country on the permanent basis (Heleniak, 2008). However, since the mid-1990s, as the economic situation in the country stabilized and then started to improve, permanent emigration began to subside while temporary labor migration began to rise again. The net migration rate rose from -10.4 in 2000 (of which -9.9 was to CIS1 countries) to -6.4 in 2006 (-4.7 to CIS countries) (Statistical Yearbook of Armenia, 2005; Statistical Yearbook of Armenia, 2008). Today, two main international migration patterns can be distinguished: permanent emigration from Yerevan, Armenia's capital city and by far the largest city, to Europe and the U.S., and seasonal labor migration from rural areas to Russia and, to a lesser extent, other countries of the Soviet Union (Gevorkyan, Mashuryan and Gevorkyan, 2006). According to Heleniak (2008), there is a well developed seasonal pattern of migration mostly to Russia, whereby people leave from January to August for seasonal work in construction and agriculture and return between the months of September and December.

Armenia is among the Eastern European countries that in last few decades have seen a dramatic fertility decline to below-replacement levels. In Armenia, according to national statistics, the total fertility rate declined from 2.6 in 1990 to 1.2 in 1999, one of the lowest levels in the world, and has seen a slight increase to 1.35 since then (Innocenti Research Centre, UNICEF). Billingsley (2008) argued that neither a contraceptive revolution nor the second

[1] The Commonwealth of Independent States (CIS) is a regional organization that includes most of the former Soviet Republics.

demographic transition provided an adequate explanation of the fertility decline in Armenia (Billingsley, 2008). Instead, the author concluded that the dramatic decline in fertility in Armenia was due to the collapsing socio-economic conditions and uncertainties about the future in the early 1990s.

The rate of induced abortion was traditionally very high in the U.S.S.R. and, despite recent declines, continues to be high in most post-Soviet countries (Agadjanian, 2002; Remennik, 1991). Both easy access to abortion and lack of opposition to abortion on moral or religious grounds have contributed to its widespread use. Another reason for high abortion use has been limited availability and popularity of modern contraception, especially in rural areas: many couples have often been discouraged from modern contraceptive use by the mass media and even the medical establishment. The prevalence of induced abortion in contemporary Armenia is similar to that in other post-Soviet countries. The 2005 Armenia DHS reports that about 37 percent of women aged 15-49 experienced induced abortion at least once in their lifetime, and among those who had at least one abortion, about 65 percent had multiple abortions. The percent of women who had an abortion is much higher in rural areas than in urban areas (ADHS 2005). Abortion by vacuum aspiration in the first ten weeks is widely available upon requests. In rural areas, the official fee for an abortion (including all the analyses) is an equivalent of US$20, and this fee is usually waived if a woman who requests abortion does not have money to pay (in urban areas, the fee is higher and rarely waived).

The high rates of induced abortions reflect the low use of contraceptives in the country. Despite the fact that knowledge of contraceptive use is very high (about 98 percent of men and women have heard of any modern method), the use remains extremely low (ADHS 2005). Among the modern methods, the IUD was reported as the most common means of current

contraception (about 9 percent of married women), followed by male condom (about 8 percent of married women) (ADHS 2005). Yet the share of ADHS married respondents reporting no current use of any modern or traditional method of contraception was very high—47 percent.

Research Question and Hypotheses: This study is aimed at answering the question how men's labor migration affects recourse to abortion and use of contraception among their non-migrating wives in a low fertility setting with a relatively easy access to abortion and low contraceptive prevalence. Based on the above discussed literature, we suggest two main hypotheses to answer this question: 1) Women married to migrants are less likely to use contraception than women married to non-migrants because of long spousal separation; 2) With respect to abortion, it is expected that migrants' wives would be more likely than non-migrants' wives to resort to abortion, because their pregnancies are more likely to be mistimed or unwanted.

Data and Methods

Data. This study uses combined data from two surveys of married women in rural Armenia. First survey on Migration, Social Capital, and Reproductive Behavior and Outcomes in Armenia was conducted in 2005. The survey was carried out in 52 villages of two provinces (marzes). One of the marzes, Ararat, is located close to the capital city of Yerevan and can be described as a more prosperous marz of the two. Tavush, the other marz, located at the border with Georgia and Azerbaijan, has been influenced by the military conflict between Armenia and Azerbaijan and is among the poorest regions in the country. In each village twenty households (1040 households in total) with women 18 to 45 years old, married to migrants and non-migrants, were selected randomly through a random walk algorithm.

The second survey on Labor Migration and STD/HIV Risks in Rural Armenia was conducted in the summer of 2007, at the height of migration season. The survey was conducted in rural areas of Gegharkunik marz (province), one of the poorest provinces of Armenia which is also believed to have among the highest rates of labor migration in the country, due to soil and climatic conditions unfavorable for agriculture, lack of alternative employment, and a well developed tradition of seasonal migration (Yeganyan and Shahnazaryan, 2004).

A three-stage sampling procedure was used to select a sample of 1,240 married women aged 18 to 40 years. First, 31 villages were selected with a probability proportional to village population size. Then, in each village all households with at least one married woman of eligible age were assigned to two lists—one with migrant husbands and another with non-migrant husbands. Finally, twenty households were selected randomly from each of the two lists and in each of those forty households one woman was interviewed.

Although samples for both studies were designed so as to achieve a more or less balanced representation of migrants' and non-migrants' wives, the number of non-migrant households exceeded the number of migrant households in both studies due to the fact that some villages didn't have enough migrant households to be included in the survey.

The data include women's full pregnancy history, detailed history of husband's work from 2001-2005 in the 2005 survey and from 2002 to 2007 in the 2007 survey, and demographic and socioeconomic characteristics at the individual and household levels.

Migration and current contraceptive use: To test the hypothesis on the effect of husband's migration on woman's current contraceptive use, we use random-intercept logistic regression to account for within-village clustering (GLIMMIX in SAS). The outcome for this model is a

dichotomous variable coded 1 if the woman currently uses a long-term contraceptive, such as IUD, pills or injections, and coded as 0 otherwise. The main predictor is husband's migration status in the year of the survey (1=migrant, 0=non-migrant). This model controls for the following socio-demographic variables: Woman's and her husband's age (continuous variable), woman's and her husband's education (categorical, used as a series of dummy variables: secondary and less education, vocational and higher education), woman's religiosity (coded 1 if attended religious services 3 times and more in the last 4 weeks, and coded 0 otherwise), household monthly income (logged for smoother distribution) and marz (Ararat and Tavush marzes are compared to Gegharkunik marz). The model also controls for the number of children the woman has had and the interaction between the number and sex composition of the children, since contraception is highly associated with the fertility preferences. Therefore, there are five dummy variables to control for the interaction between number and sex composition of children: only one boy, only one girl, two and more boys only, two and more girls only, and two and more children of both sexes.

Migration and abortions: To predict the likelihood of a pregnancy being terminated through induced abortion, the models are also fitted through random-intercept logistic regression to account for within-village, as well as within-woman clustering of pregnancies. However, in the abortion models the unit of analysis is pregnancy. Because husband's migration status is known for the period after 2001 (2002, in the 2007 dataset), only the pregnancies that occurred in this period are considered in the models. For respondents who married their current husbands after 2001 (2002) the window of observation is reduced accordingly. Therefore, the outcome variable is a dichotomy indicating whether or not pregnancy that occurred in the above-mentioned time period ended in abortion (coded 1 if yes, and coded 0 otherwise). The main

predictor in these models is also husband's migration status, however it is conceptualized as a time varying variable, so that the husband is considered migrant if he was away on seasonal work in the year the pregnancy ended.

This model includes socio-demographic controls similar to those in the model predicting current contraception. Controls include woman's age in the year the pregnancy ended, which is parameterized as quadratic, as it is expected that the age pattern of unwanted pregnancies and therefore abortions follow the age pattern of fertility in general, varying from low to high and then to low again. The model also controls for woman's and her husband's education, woman's religiosity and marz, measured in the way similar to the model predicting current contraception. To control for household wellbeing household asset index is used (values range from 0 to 6). This model also controls for the number of children the woman has had and the interaction between the number and sex composition of the children**,** conceptualized the same way described above.

Results

Table 1 presents the distribution of the main variables by husband's migration status. It can be observed from this table that women and their husbands in migrant households are slightly older than their counterparts in non-migrant households. In migrant households both men and women also have lower education on average, and more frequently participate in religious activities than those in non-migrant households. Average household monthly income is significantly higher in migrant households than in non-migrant households (by about $50). Table 1 also shows that average number of births and average number of abortions is slightly higher among women married to migrants than among women married to non-migrants. However, the

current use of long-term contraception is higher among women married to non-migrants, than those married to migrants by about 6 percent.

Table 2 presents the results of the random-intercept logistic regression predicting woman's current use of long-term contraception. The presented results are odds ratios and should be interpreted as increase or decrease in the odds of currently using long-term contraception associated with a unit increase in the continuous independent variable in question or, for categorical variables, with being in a given category relative to the reference category. Therefore, value above unity signifies a positive effect, whereas a value below unity means a negative effect. Model 1 in this table predicts the effect of husband's migration status on woman's use of long term contraception when no other factors are controlled for. It is evident that women married to migrants are about twice less likely to use long term contraception than women married to non-migrants, not controlling for other factors. However, even when the main socio-demographic variables are added to the analysis in Model 2, the negative effect of husband's migration remains almost equally strong and statistically significant. Total number of children does not add much to the analysis either, and does not affect the association between husband's migration and contraceptive use in Model 3, indicating that number of children, net of other socio-demographic characteristics, does not explain contraceptive use among women.

Interestingly the interaction between number and sex composition of children significantly affects long term contraceptive use among women. In particular, having only one boy, one girl or two and more girls only, compared to having two and more children of both sexes, decreases the odds of using long-term contraception by about 60, 70 and 40 percent, correspondingly. Whereas, the effect of having two and more boys only is not significantly different from the effect of having two and more children of both sexes on the use of long-term

contraception. These results suggest that contraception is mostly used to limit fertility rather than to space the births, at the same time showing strong son preference in this setting. However, controlling for this interaction term also does not affect the strength of the association between husband's migration and the outcome. Household monthly income does not add much to the analysis of long-term contraception as well. In summary, husband's migration status decreases the odds of long-term contraceptive use by about 50 percent at a statistically significant level, controlling for socio-demographic characteristics, economic wellbeing and number and sex composition of children.

The results of the analysis of the associations between husband's migration status and woman's pregnancy ending in abortion are presented in Table 3. Model 1 shows the effect of husband's migration on the odds of a pregnancy ending in abortion when no other factors are controlled for. We can see that the odds of pregnancy ending in abortion are about 38 percent higher when the woman is married to a migrant, not controlling for other factors. However, when we add socio-demographic controls to the analysis, husband's migration status is no longer a significant predictor of pregnancy outcomes. The detailed analysis (not shown on the table) revealed that the effect of husband's migration can mostly be explained by the age of the woman. Each year of age increases the odds of a pregnancy ending in abortion by about 2.8 times, net of other factors, and this association is quadratic as we were expecting. Women married to migrants are slightly older than women married to non-migrants on average, which explains the positive effect of husband's migration on the pregnancy outcomes in Model 1.

In Model 3, as we add total number of children previous to the current pregnancy to the analysis, the size of the effect of woman's age on the pregnancy outcomes drops significantly. This means that the effect of age can be partially explained by the increased number of children

at older ages. The results in Model 4, where the interaction between the number and sex of the children is added to the analysis, show that it is not just the increased number of children that makes women more prone to abortion with age, but rather the number by sex composition of children. In particular, women with only one child of either sex are less likely to abort the pregnancy by about 98 percent than those with two or more children of both sexes, net of other factors. Whereas women with two or more daughters are 0.24 times less likely to abort the pregnancy than those with two or more children of both sexes. What is interesting, however, is that the odds of a pregnancy ending in abortion is not significantly different between women with two or more boys only and women with two or more children of both sexes.

Household economic wellbeing in Model 5 also significantly adds to the analysis of pregnancy outcomes, indicating that those at the higher level of economic wellbeing are 1.3 times more likely to abort the pregnancy than those with fewer assets, net of other factors.

Conclusions

This study adds to the limited literature on the associations between male seasonal migration and reproductive behavior of their partners left behind. Our results on the association between migration and contraceptive use are compatible with those from other settings (Kaufman, 1998), indicating that women married to migrants are significantly less likely to use long-term contraception than women married to non-migrants. Previous studies suggest that lower use of contraceptives among couples with a seasonal migrant may be the result of lack of power to negotiate safe sex (Hughes, Hoyo and Puoane, 2006). It is also possible that migrants' partners underestimate their risks of getting pregnant or contracting a disease due to the disruption of the normal frequency of sexual intercourse.

However, contrary to our expectations, the results show that women married to migrants are not more likely to terminate their pregnancies through abortions than non-migrants' partners in rural Armenia. These findings indicate that lower contraceptive use among migrants' partners is leveled out by less frequent sexual intercourse, putting them at risk of unwanted pregnancies equal to those of non-migrants' partners.

Several limitations apply to our analysis. Firstly, the lack of full migration histories restricts the analysis of pregnancy outcomes to the pregnancies that occurred during the last five years. The lack of contraceptive histories also limits our study to only current contraceptive use. However, the results of this study are consistent with the previous research, and fill the gap in the scant literature on migration and reproductive behavior in low fertility, low contraception and high seasonal migration areas.

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Appendix

Table 1. The distribution of the main dependent and independent variables by husband's migration status (percentages, unless noted otherwise)

	Non-migrant husband	Migrant husband	Total
Woman's age (mean)	33	34	33
Husband's age (mean)	38	39	28
Woman's education			
Secondary and less	60.1	61.9	60.8
Vocational and higher	39.9	38.1	39.2
Husband's education			
Secondary and less	62.6	64.7	63.5
Vocational and higher	37.4	35.3	36.5
Not religious	44.7	38.1	41.9
Household monthly income (mean)	178	233	200
Number of births (mean)	2.6	2.7	2.6
Number of abortions (mean)	1.4	1.6	1.5
Currently using long-term contraception (Pills, IUD, injections)	13.2	7.1	10.7

Table 2. Odds ratios of a woman currently using long-term contraception.

	Model 1	Model 2	Model 3	Model 4	Model 5
Husband's migration status					
(Not migrant)	1	1	1	1	1
Migrant	0.526**	0.523**	0.522**	0.526**	0.508**
Age		0.992	0.991	0.983	0.978
Husband's age		1.007	1.007	1.002	1.007
Woman's education					
(Secondary and lower)		1	1	1	1
Vocational and higher		0.986	0.988	1.001	1.095
Husband's education					
(Secondary and lower)		1	1	1	1
Vocational and higher		1.501**	1.501**	1.476*	1.437*
Religiosity					
(Religious)		1	1	1	1
Not religious		1.054	1.054	1.045	1.000
Marz					
(Gegharkunik)		1	1	1	1
Ararat		1.134	1.135	1.189	1.318
Tavush		1.087	1.088	1.120	1.306
Number of children			1.011	-	-
Number of children by sex composition					
(2 and more children of both sexes)				1	1
One boy				0.394*	0.438†
One girl				0.304*	0.321†
2 and more boys only				1.204	1.171
2 and more girls only				0.598*	0.547*
Household monthly income (logged)					1.099
-2 Res Log Pseudo-Likelihood	10889	10937	10940	10998	10317
Number of cases	2094	2089	2089	2089	1959

Notes
Significance levels: **- $p<0.01$, *- $p<0.05$, †- $p<0.1$
Reference categories in parentheses

Table 3. Odds ratios of a pregnancy ending in abortion

	Model	Model 2	Model 3	Model 4	Model 5
Husband's migration status					
(Not migrant)	1	1	1	1	1
Migrant	1.379 *	1.257	1.201	1.217	1.112
Age (time varying)		2.765 **	1.606 **	1.161	1.157
Age Squared		0.986 **	0.993 **	0.999	0.999
Woman's education					
(Secondary and lower)		1	1	1	1
Vocational and higher		0.587 **	1.005	0.980	0.890
Husband's education					
(Secondary and lower)		1	1	1	1
Vocational and higher		1.183	1.129	1.130	0.961
Religiosity					
(Religious)		1	1	1	1
Not religious		1.156	1.114	1.132	1.238
Marz					
(Gegharkunik)		1	1	1	1
Ararat		0.500 *	0.556 †	0.560 †	0.545 †
Tavush		0.302 **	0.305 **	0.325 **	0.322 **
Number of prior births			5.604 **	-	-
Number of children by sex composition					
(2 and more children of both sexes)				1	1
One boy				0.022 **	0.020 **
One girl				0.020 **	0.018 **
2 and more boys only				0.822	0.851
2 and more girls only				0.235 **	0.225 **
Assets					1.247 **
-2 Res Log Pseudo-Likelihood	9138	9528	10119	10056	10117
Number of cases	2087	2086	2086	2086	2086

Notes
Significance levels: **- $p<0.01$, *- $p<0.05$, †- $p<0.1$
Reference categories in parentheses