Achieved Fertility and Fertility Intentions among Ethnic Groups in Central Asia: Kyrgyzstan, Tajikistan, and Uzbekistan Compared

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Abstract

The literature on minority group status and fertility usually focuses on a within-country comparison of the behavior of population groups with different racial, ethno-cultural or religious background. Our study adds several dimensions to this approach. By comparing co-ethnics across three neighboring countries, we are able to sort out the separate roles of minority-group status, ethnicity, and country of residence in fertility behavior. The results of our analysis, based on survey data from three countries in Central Asia, show a strong country effect on achieved fertility and fertility intentions but only modestly negative effects of minority-group status on fertility in this region.

Introduction

In this paper we study fertility and fertility intentions in three post-Soviet Central Asian countries: Kyrgyzstan, Tajikistan, and Uzbekistan. Apart from geographical proximity, decades of shared statehood under the Russian Empire and later the USSR, and a painful period of sociopolitical and economic transformations following the demise of the Soviet Union in 1991, these countries have in common relatively high fertility with Tajikistan leading the parade.

Although there is a considerable body of literature addressing demographic developments in the countries once constituting the USSR (e.g., Bodrova 1995; Zakharov and Ivanova 1996; Rimashevskaya 1997; Kohler and Kohler 2002; Perelli-Harris 2005 ad 2006; Billingsley 2010, 2011a and 2011b), post-Soviet Central Asia has not received adequate attention. In particular, research on the region has lacked a comparative perspective (for the few examples of comparative studies on Central Asian countries see Buckley 1998; Gentile 2007; Agadjanian and Dommaraju 2008; Agadjanian Dommaraju, and Nedoluzhko 2012). Yet whereas ethnic and ethno-cultural differences in fertility behavior of Central Asia have been addressed in a number of recent studies (Agadjanian 1999; Agadjanian Dommaraju, and Glikc 2008; Agadjanian and Makarova 2003; Nedoluzhko and Andersson 2007; Nedoluzhko and Agadjanian 2010), the focus has largely been restricted to disparities between people of Asian and European origin (also referred to as Asians and Europeans for brevity). In this paper, we expand the focus by also comparing ethnic groups that are indigenous to Central Asia and which all share cultural traditions and norms that encourage childbearing. We look at between- as well as within-ethnic differences in fertility indicators. In the latter case we compare co-ethnics residing in the countries where they constitute a majority of the population and in the countries where they are a minority. The objective of the paper is twofold; we aim to contribute to the scarce demographic literature on fertility of the ethnically diverse population of the region and to test the effect of ethnic minority status on fertility. The latter is achieved by relating the role of minority-group status to the additional and independent effects of ethnicity and country of residence.

The paper begins with background information on Central Asia and a descriptive analysis of fertility dynamics in this region. Then we review the

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literature on ethnic-specific demographic behaviors of populations in Central Asia, present the conceptual model of the study, the data, methods, study populations, and the results of our analysis. The concluding section discusses the findings and outlines some areas for future research.

Central Asia

Central Asia resembles a patch-work quilt as each of its nations - Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan - differs from the rest in one respect or another. Uzbekistan is the most populous (28.1 millions) and the most densely inhabited. Kyrgyzstan and Tajikistan with a population of 5.3 and 7.6 millions, respectively, also fall into the category of densely populated areas as they covered with mountains that leave only about 10 percent of the territory suitable for human inhabitation and agriculture. Kazakhstan is the second in population size (16.3 millions) but also the most spacious, with an area twice the size of the other Central Asian countries combined. Turkmenistan – the smallest in population (5.2 millions) - is also comparatively sparsely settled (Population Reference Bureau 2010). The two most populous countries in the region have adopted very different population policies: whereas Kazakhstan encourages fertility, Uzbekistan strives to limit its population growth[1].

The population of Central Asia is multiethnic with the largest share of ethnic minorities in Kazakhstan. In each of its states the titular ethnic group constitutes an absolute majority. The rest of the population mostly consists of other ethnicities autochthonous to the region. Kyrgyzstan and particularly Kazakhstan also have sizable, although rapidly shrinking communities of Russians and other people of European origin[2]. In other Central Asian countries the share of Europeans today is minuscule as most of them left in the face of the escalation of ethnic nationalism following the disintegration of the USSR.

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[1] Different sources report that state-sanctioned family planning campaign in Uzbekistan includes programs of sterilization of women, often performed without their consent (see e.g., "The Sunday Times", April 25, 2010, http://www.timesonline.co.uk/tol/news/world/asia/article7107200.ece).
[2] According to the 2009 Kazakhstan and Kyrgyzstan censuses, Russians – by far the most numerous population group of European stock - constituted 23.7 percent of the population in Kazakhstan and 7.8 percent of the population in Kyrgyzstan, or in absolute numbers, 3794 and 420 thousands. The previous 1999 censuses indicated a considerably higher share of this ethnic group in the population of both countries - 29.9 percent in the former and 12.5 percent in the latter, or 4481 and 603 thousands respectively (Agency on Statistics of the Republic of Kazakhstan 2010; National Statistical Committee of the Kyrgyz Republic 2009).

A typical characteristic of Central Asia, resulting from arbitrary delimitation of administrative borders between former Soviet republics, is the existence of sizable ethnic communities residing outside the countries where their co-ethnics enjoy the status of titular nation. This phenomenon, neatly defined as a 'mismatch between borders and people' (Fumagalli 2007a) is particularly vivid in the case of the three nations on which we focus our study: Kyrgyzstan, Tajikistan, and Uzbekistan who share the territory of the Fergana valley where state frontiers cut across ethnic communities. Thus Uzbeks not only dominate in the country named after them but also constitute the second largest population group in Kyrgyzstan and Tajikistan[3]. There is also a sizable community of Tajiks in Uzbekistan, whereas Kyrgyz are less strongly represented in the populations of the neighboring nations[4].

The ethnic diversity of the region corresponds to a linguistic and religious diversity. All but one state language in Central Asia belong to the Turkic group; Tajik is a Persian language. In the countries with a considerable share of Russians, Russian is still widely spoken. The dominant religion in Central Asia is Islam. Russian Orthodox Christians and minor groups representing other confessions add to the religious mosaic of the region.

The economic fortunes of the Central Asian nations vary greatly. The early post-Soviet period brought dramatic economic downturns and appreciable declines in living standards to all countries in the region. This resulted from the dissolution of the centralized economic system and the abolition of guaranteed employment, free social services, and subsidized pricing (Kaser and Mehrotra 1992; Spoor 1997; Pomfret and Anderson 2001; Pomfret 1999, 2003, and 2005; Falkingham 2005). Yet the different initial economic conditions, particularly in terms of natural resources, and the development strategies adopted by the newly independent countries, have determined the economic balance of power in Central Asia. Oil and natural-

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[3] Uzbeks are also settled in other CA countries and in Afghanistan.
[4] Available statistics suggest that share of Uzbeks is about 14.3 percent in the population of Kyrgyzstan and 15.3 percent in the population of Tajikistan. Tajiks represented 0.9 percent of the population in Kyrgyzstan and 4.9 percent of the population in Uzbekistan. The share of Kyrgyz in Tajikistan's and Uzbekistan's populations is about one percent. Titular ethnicities in Kyrgyzstan, Tajikistan and Uzbekistan make up, respectively, 70.9, 79.9, and 78.8 percent of the population. Importantly, available information on the ethnic composition of the population in these settings refers to different times; for Kyrgyzstan it is derived from the 2009 census, for Tajikistan from the 2000 census (National Statistical Committee of the Kyrgyz Republic 2009, State Committee on Statistics of the Republic of Tajikistan 2002). For Uzbekistan, where no census has been conducted since independence, they are 2002 estimates (cited from Dadabaev 2004, p. 145).

gas rich Kazakhstan and Turkmenistan are currently far ahead in economic performance from the rest of the region; Tajikistan is the poorest country.

The politics of the independent Central Asian nations is also not uniform; it covers the gamut from authoritarianism to democracy. The countries also differ in the magnitude of societal cataclysms they have endured. Along with the economic turmoil, Tajikistan lived through a devastating civil war in 1992-1997 and food crises in 1995 and 2000/01. Kyrgyzstan experienced riots involving the overthrow of its presidents in 2005 and 2010. Uzbekistan underwent violently repressed anti-government demonstrations in 1992 and 2005 and incursions of Islamist militants in 1999 and 2000 (Hyman 1993; Fumagalli 2007a and 2007b; Clifford, Falkingham, and Hinde 2010; Lewington 2010). The major source of social and political tensions in the region is the Fergana valley – an overpopulated and intensively farmed area divided between three Central Asian countries by porous borders – where disputes over land and water bear high potential for conflicts. In 1990 and 2010 it was a scene of bloody interethnic clashes between Kyrgyz and Uzbeks in Kyrgyzstan. There also was an interethnic clash between Uzbeks and Meskhetian Turks living in Uzbekistan's part of the Fergana valley in 1989.

With regard to its demographics, Central Asia stands out as a region with higher fertility than elsewhere in the former USSR. General fertility trends by country, however, mask substantial ethnic fertility variations. Whereas ethnicities that are indigenous to the region have comparatively high fertility, Russians and other Europeans have below-replacement level fertility. The low fertility of Europeans is usually seen as a result of their more advanced stage of the demographic transition (e.g., Bondarskaya and Darsky 1988; Denisenko 2004; Agadjanian and Dommaraju 2011, Nedoluzhko 2011).

In all Central Asian countries populations are young with the share of those younger than 15 comprising from 24 percent in Kazakhstan to 38 percent in Tajikistan. Despite a mostly negative migration balance the population of the region is growing. Another feature of Central Asia is the predominance of its rural population. The share of rural dwellers is lowest in Kazakhstan (46 percent) and highest in Tajikistan (74 percent) (Population Reference Bureau 2010).

The observed fertility declines, which in Central Asia started already during the Soviet period, continued at a still higher pace after the demise of the USSR. Up to the mid 1990s they were mainly driven by the reduction of higher-order births, with first birth rates remaining relatively stable. A similar pathway in fertility developments has been reported for post-Soviet Europe as well (Kohler and Kohler 2002 for Russia; Perelli-Harris 2005 for Ukraine; Billingsley 2011a for Armenia and Moldova). Later years also brought evidence of decreasing first-order fertility in Central Asia, generally associated with reduced rates of first union formation (see Denisenko 2004 for Kyrgyzstan; Clifford, Falkingham, and Hinde 2010 for Tajikistan). For Kazakhstan a reduction of first-birth rates within marriage has also been documented (Agadjanian, Dommaraju, and Glikc 2008).

Aggregate total fertility trends in post-Soviet Central Asia largely parallel those in the rest of the former USSR. During the first decade of independence fertility declined across the post-Soviet space, with the period TFR for Russia falling below the threshold of 1.3 in 1996, which is defined as "lowest-low fertility" (Kohler, Billari, and Ortega 2002; Billary and Kohler 2004), and plunging further down to 1.17 in 1999. The beginning of the new millennium brought a reversal in fertility developments (see Figure 1); like Russia, Kazakhstan and Kyrgyzstan generally saw an increase in period TFRs throughout the 2000s [5]. Official statistics also suggest a recent fertility increase in Tajikistan; for Uzbekistan they indicate that period fertility remained relatively stable during the past decade. No recent data on Turkmenistan are available[6].

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[5] The fertility rebound has been observed also in many other settings, particularly those who have experienced lowest-low fertility, such as Ukraine, Belarus and the Baltic countries of the former USSR (Goldstein, Sobotka, and Jasilioniene (2009).

[6] Although under registration of births appears to be a common problem for the region, figures are particularly uncertain for three states: Tajikistan, Turkmenistan, and Uzbekistan. In Tajikistan, data collection is irregular due to prolonged periods of societal turbulence (civil war, political instability, and economic collapse). Turkmenistan hardly releases any statistics for open use. The lack of censuses in post-Soviet Uzbekistan casts serious doubts on statistics referring to its population structure and, correspondingly, to demographic rates calculated on these statistics. See also Gentile (2007) for discussion of data quality and availability in Central Asia.

Figure 1 Total fertility rates in Central Asian countries and Russia, 1989-2009
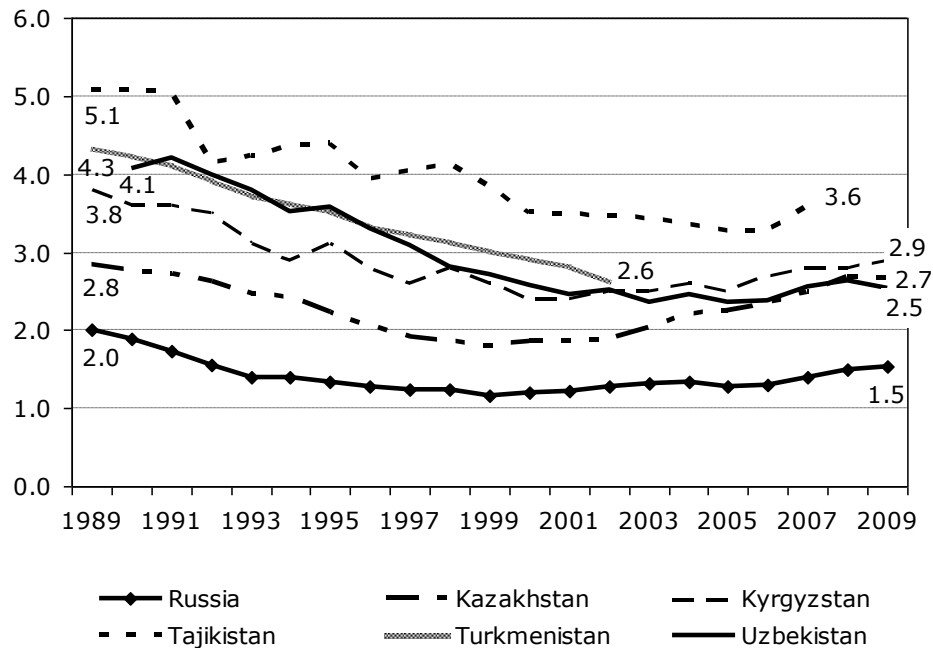
Source: TransMONEE 2011 Database, UNICEF Regional Office for CEE/CIS, Geneva, www.transmonee.org

Ethnic divides in demographic behaviors

The literature on Central Asia has tended to see ethnic variations in demographic behaviors as the outcome of enduring cultural differences, particularly pronounced between native Asian populations and Europeans. The Asian–European demographic divide has also been the most studied in earlier research. The cultural constituent of demographic behavior, as manifested through Asian or European origin ethnicities, has been found to play an essential role in shaping divergent reproductive and nuptial patterns, (e.g., Agadjanian 1999; Agadjanian and Makarova 2003; Denisenko 2004; Denisenko and Kalmykova 2011; Nedoluzhko 2011). Several studies have acknowledged the role of Russian culture imposed on the indigenous populations of Central Asia. These studies go beyond the simple Asian-European dichotomy by also analyzing the demographic divides between more and less "Russified" segments of the Asian population (Agadjanian and Qian

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1997; Agadjanian 2002; Nedoluzhko and Andersson 2007; Agadjanian, Dommaraju, and Glikc 2008; Nedoluzhko and Agadjanian 2010; Agadjanian and Dommaraju 2011).

Along with the "cultural factor", differences in demographic behavior have been ascribed to the disadvantaged political, socioeconomic and cultural positions of ethnic minorities. For minority groups the hardships entailed by the dramatic political and socioeconomic shifts following the collapse of the former Soviet Union were reinforced by growing nationalism (Agadjanian 1999; Agadjanian and Makarova 2003). The shocks associated with the rubble of the USSR were particularly traumatic for Russians who along with their former political positions also lost linguistic and cultural privileges. The language policies of independent Central Asian nations have been oriented toward de-Russification; this has hit other Russian-speakers as well (Kumskov 2002 and 2007; Melvin 2000).

The societal and ethno-cultural discomfort of ethnic minorities in Central Asia has been argued to constitute a major push factor for mass out-migration of ethnic Russians, Ukrainians, Germans, Jews, and other ethnicities of European roots (e.g., Tishkov 1994; Subbotina 1997; Nedoluzhko 2000; Kumskov 2002 and 2007). There is also a growing body of literature that connects ethnic-specific nuptiality and fertility behaviors in Central Asia to ethnic group status (Agadjanian 1999; Agadjanian, Dommaraju, and Glikc 2008; Agadjanian, Dommaraju, and Nedoluzhko 2012). This literature suggests that different levels of group vulnerability are likely to result in different levels of demographic responsiveness. It has been documented that fertility responses to the crisis following the dissolution of the former Soviet Union were particularly pronounced among ethnic minorities of European origin. Europeans in Kazakhstan were found to be more likely than the majority population to postpone first marital births at the times of hardship and uncertainty (Agadjanian 1999; Agadjanian, Dommaraju, and Glikc 2008). The fertility rebound during the subsequent economic upturn in this country was also stronger among the Russian minority group (Agadjanian, Dommaraju, and Nedoluzhko 2012). The results on marriage dynamics were, however, less consistent. Whereas Europeans were found to be more likely than the indigenous population to react to the crisis by marrying earlier (Agadjanian 1999), there were no evidence of ethnic-specific

marriage responses to the post-crisis recovery (Agadjanian, Dommaraju, and Nedoluzhko 2012).

Europeans and particularly Russians, whose position in Central Asia has turned from "*primus inter pares*" to "unwelcome guests" (Fumagalli 2007a), have not surprisingly attracted most attention of the research that link demographic outcomes to the social, economic, and political status of minority groups. Political fortunes of other ethnic minorities in the region, specifically of Uzbeks settled outside of Uzbekistan, have also been the subject of some recent studies (e.g., Fumagalli 2007a and 2007b). Yet the demographic implications of minority-group membership, particularly among indigenous Central Asian ethnicities, remain largely unknown. Our paper seeks to contribute to this topic.

Conceptualization

The literature on group status and fertility has generally focused on single within-country comparisons of populations with different racial, ethnic, and religious background. Previous research on Central Asia that argues for demographic implications of minority group status has also been based on within-country comparisons (e.g., Agadjanian 1999; Agadjanian, Dommaraju, and Glikc 2008). It has contrasted the behaviors of Europeans with those of Asians – two groups that differ from each other not only in their political and socioeconomic fortunes but also in the advancement on their paths of demographic transition and in religion.

In this study, we improve on previous research designs by studying ethnic groups who live across the borders of three neighboring countries in Central Asia. To address the issue of intertwined effects of ethnicity, country of residence and minority-group status we compare co-ethnics in countries where they are the eponymous population group with those in countries where they are minorities. Such an approach allows us to separate the effect of minority status from a number of other factors. The general assumption that guides our research is that the fertility behavior of an ethnic minority group is a function of the disadvantaged political, social, and economic positions of its members. Correspondingly we expect to find fertility differentials, as measured through number of children ever born (CEB) and

fertility intentions, between co-ethnics representing majority and minority population groups in neighboring countries.

We draw our hypotheses on earlier literature that connects group status and fertility. There are two general lines of reasoning proposed in this literature: the "characteristics" explanation and the "minority group status" perspective. The characteristics explanation suggests that fertility divides between majority and minority population groups are the result of divergent socioeconomic and/or demographic characteristics. When members of both groups share such characteristics they also have similar fertility levels (Lee and Lee 1952, 1959), i.e., when characteristics are controlled for, the fertility of minority and majority groups is indiscernible.

The minority group status perspective argues that constraints and insecurities associated with minority status exert an effect on fertility that is independent of socioeconomic and demographic characteristics (Goldscheider and Uhlenberg 1969; Sly 1970; Ritchey 1975). Further, since it might be harder for minorities to advance their educational and other social and economic careers, the effect of minority status might interact with the effects of socioeconomic characteristics. Developed for the US context this perspective suggests that depending on the desire for and degree of acculturation the fertility of a minority group can either be lower or higher than that of the majority group. If the desire for acculturation is on the minority group agenda, one may expect comparatively low fertility of its members as they try to compensate for some of their disadvantages, particularly those related to upward social mobility, by deferring or limiting childbearing. For members of a minority group the deferring or limiting of fertility can also serve as a strategy to preserve socioeconomic achievement (Marcum and Bean 1976).

On the contrary, the exclusion from the process of acculturation or resistance to it is argued to be related to a comparatively high fertility among minorities. This is because the concern about group preservation and its numerical strength may result in the persistence of norms conducive to high fertility. "If minority group integration and identification … imply greater commitments to a religious ideology or socio-cultural norm encouraging large families or restrictions on the maximum choice with respect to contraception usage, then minority group status will operate to enhance the differential

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between minority and majority groups through higher minority group fertility" (Goldscheider and Uhlenberg 1969). Noteworthy, the role of group identification and commitments to group-specific norms on reproduction has been considered central behind the elevated fertility of populations in the state of conflict, such as those of Israelis and Palestinians (e.g., Anson and Meir 1996; Fargues 2000).

In the context of post-Soviet Central Asia it makes sense to link minority status both to the prospects of individual socioeconomic mobility and to group integration. First, ethnic and other forms of favoritism related to local politics that privilege titular ethnicities over others generate unequal conditions for individual careers and group competitiveness. Second, the political, social, and ethnic conflicts simmering in the region form a milieu in which the numeric strength of a group becomes a matter of its security. Correspondingly, in line with the minority group status perspective, the group specific experiences and circumstances can translate either in comparatively low or comparatively high fertility of its members. Yet because both parties to a conflict may exhibit elevated fertility, we expect socioeconomic mobility to be the more likely factor to determine the majority-minority fertility gap.

If deferring or limiting childbearing is a strategy applied to enhance social mobility, fertility among ethnic minorities should be comparatively low. Further, as the disadvantages associated with minority status are likely to impede social and economic careers, we expect to find that majority-minority differentials in fertility are more pronounced among individuals with higher educational level and greater wealth. Alternatively one could argue that such differences would be wider for the low social stratum, as the poor and low educated might experience or perceive particularly strong constraints associated with minority status.

Data

We employ data from the Multiple Indicator Cluster Surveys (hereafter MICS), conducted in Kyrgyzstan, Tajikistan, and Uzbekistan in 2005 and 2006[7]. The surveys collected information on households, children under age five, and women of reproductive age. We employ data collected through interviews with women, restricting the working sample to all three countries' titular ethnicities, i.e., Kyrgyz, Tajiks, Uzbeks, and Russians. The pooled sample of women aged 15-49 employed in our study consists of 28,225 observations[8].

Whereas MICS data provide unique demographic information, they have several limitations that constrain the analysis of ethnic-specific demographic behaviors. First, the only marker of ethnicity in MICS is the mother tongue of the household head. We use this information as a proxy for the respondent's ethnic background. Further, the MICS data differentiate only among the most numerous ethnic groups and combine other groups into a single category of "others". Second, the surveys collected information on total number of children ever born and on fertility intentions but they do not contain full reproductive histories; only the dates of the first and most recent birth are available. This prevents us from producing an event-history analysis of parity-specific childbearing behavior. Third, respondents' union histories are restricted to the dates of first union formation. Finally, covariates accounting for educational attainment are not coded uniformly across countries.

Methods

In the first part of our analysis, we fit a Poisson regression[9] to model the number of children ever born, i.e., of achieved fertility. To be able to control for the effect of union duration[10], we use only data on ever married or ever cohabiting women, who had no birth prior to first union. In the second part of our analysis, we estimate a logistic regression model for binary outcomes

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[7] No similar survey is readily available for Turkmenistan. The corresponding MICS survey for Kazakhstan is only of limited use for the purposes of our analysis: It contains data on Kazakhs and Russian minorities but not on any minorities of Asian origin.

[8] The number of observations used in our models is smaller as we restrict the working samples by a number of respondent characteristics.

[9] This model specification fits our data reasonably well: initial checks of the data reveal no signs of over-dispersion. For examples of other related studies based on this method, see, e.g., Agadjanian et al. (2011), Poston (2002), Poston et al. (2006).

[10] For respondents formerly "in a union" and respondents who had more than one union, the corresponding control refers to the time elapsed since the onset of first union.

related to fertility intentions. The dependent variable in this model is constructed from the question: "Would you like to have (a/another) child, or would you prefer not to have any (more) children?" It allows for four possible responses: 'have (a/another) child'; 'no more/none'; 'cannot get pregnant', and 'undecided/don't know'. We combine the responses "no more/none" and "undecided/don't know". Women who reported infecundity (replied: cannot get pregnant") are excluded from this part of the analysis. We also exclude women who were expecting a child at the time of the interview. Moreover, this subsample is restricted to women who had at least one live child; for nulliparous women the desire to have a child appears to be practically universal. Restricting the working sample to women with [a] child(ren) also allows us to controll for another important determinant of intended fertility – time since last birth.

The main predictor variable in our analyses is designed to account for respondent's ethnicity, country of residence, and majority/minority group membership. The ethnic composition of the surveyed populations allows for the analysis of the behavior of Uzbeks and Tajiks in the countries where they are eponymous ethnicities and of their co-ethnics in the countries where they are ethnic minorities: of Uzbeks in Kyrgyzstan and Tajikistan and of Tajiks in Uzbekistan. Kyrgyz represent a sizable share only in Kyrgyzstan's data where they are the majority group. Russians are minorities in all three countries covered. The subsamples employed in the analyses of CEB and fertility intentions by the levels of this predictor variable are presented in Table 1.

With the data on Tajiks and Uzbeks in Tajikistan and Uzbekistan we can additionally fit models where all three dimensions of ethnicity, country of residence, and group status are estimated as separate indicators. (Our data do not allow such a setup of predictor variables for Kyrgyz and Russians). Uzbeks in Tajikistan and Tajiks in Uzbekistan are coded as minority; correspondingly, Uzbeks in Uzbekistan and Tajiks in Tajikistan are majority groups. A similar operationalization of minority status was proposed in a recent study on religious minorities in India and Bangladesh (Sahu et al. 2011).

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Table 1 Working samples by respondents' country of residence and ethnicity

Country	Ethnicity	Model on children ever born (1) N	Model on fertility intentions (2) N
Kyrgyzstan	Kyrgyz	3,253	2,790
	Uzbek	679	602
	Russian	515	434
Uzbekistan	Uzbek	7,684	6,282
	Tajik	513	423
	Russian	444	426
Tajikistan	Tajik	4,370	3,622
	Uzbek	1,190	1,009
	Russian	86	73
		18734	15661

Notes:

1) Women ever in union with no birth prior to first marriage/cohabitation
2) Women with at least one live child

Apart from our main predictor variables we control for age at first union formation and for union duration in the analyses of children ever born. The models on fertility intentions include continuous control variables for time elapsed since last birth (linear and squared), age at first birth, and dummy variables for parity (1, 2, 3+) and sex composition of live children ("has no son", "has at least one son"). All models are standardized for respondent's union status ("not in union", "in union"), area of residence (rural, urban, capital), education ("secondary or less", "at least some higher education"), and household wealth ("poor", "middle", "rich"); each level of these covariates is represented by a dummy variable.

Most of the covariates are straightforward and need no clarification. The category "in union" is almost entirely composed of married women (98.2%); "not in union" refers to formerly married/cohabiting women in the model on achieved fertility[11] and to formerly married/cohabiting and single

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[11] Women ever in union with no birth prior to first marriage/cohabitation.

women in the model on fertility intentions[12]. "Parity" corresponds to the number of live children among women who have had a child(ren). Household wealth is measured at the time of survey and ranked by country-specific wealth quintiles. This indicator in MICS is calculated on the basis of household assets and weighted by the number of household members. We combine the two first and two last wealth quintiles, respectively, into our categories "poor" and "rich".

Study Population

Table 2 presents the breakdown of our study population of women ever in union, by selected demographic and socioeconomic characteristics. The figures indicate that Russians have similar fertility levels in all three countries. There is also a striking similarity in the number of children ever born and in ages at first union and first birth among respondents of Asian origin within each country. Moreover fertility of the Asian groups in Kyrgyzstan and Uzbekistan seems to be pretty much the same, but fertility is higher in Tajikistan. Yet, there are pronounced differences in the composition of majority and minority ethnic groups by educational level, wealth, and share of rural residents, both on the cross- and intra-country levels. This suggests that both compositional characteristics and other factors may play a role in determining group specific fertility. To examine the effects of socioeconomic characteristics and of minority status we carried out multivariate analyses whose results are discussed in the following section of the paper.

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[12] Women with at least one live child.

Table 2 Selected characteristics of women ever in union, MICS 2005/06

Country	Ethnicity	Median age	Median age at 1st union	Median age at 1st birth	Mean number of CEB (SD)	Higher education, %	Rural residents, %	Low wealth ranking, %
	Kyrgyz	33.9	20.2	21.4	2.8 (1.8)	24.4	48.7	45.8
Kyrgyzstan	Uzbek	34.3	20.1	21.4	2.7 (1.6)	8.1	27.7	43.7
	Russian	34.6	20.0	21.5	1.7 (1.0)	26.0	21.7	11.1
	Uzbek	33.2	19.9	21.1	2.8 (1.7)	10.2	62.6	34.3
Uzbekistan	Tajik	33.3	19.5	20.8	2.8 (1.7)	5.1	53.7	34.0
	Russian	37.4	20.9	22.1	1.6 (1.0)	31.0	2.9	1.3
	Tajik	34.1	19.4	20.8	3.6 (2.3)	8.7	58.4	28.8
Tajikistan	Uzbek	33.0	19.5	20.7	3.3 (2.1)	5.6	77.9	39.2
	Russian	35.7	21.9	23.2	1.6 (1.2)	50.0	4.7	-

Results

Achieved fertility: Children ever born

Table 3 presents estimates from the Poisson regression model on the number of children ever born. The within-country comparisons indicate that achieved fertility among Asian groups is rather similar. This makes it difficult to argue for strong minority group status effects -- even if some of the differences reach statistical significance[13]. It also questions the importance of cultural differences between these groups that are strong enough to translate into substantial fertility divides. Still, in each of the three countries, the minority group of Asian origin has lower rather than higher achieved fertility. Not surprisingly, Russians have considerably lower fertility than Asians in each country.

The cross-country comparison of co-ethnics shows that Uzbeks and Tajiks in Tajikistan have higher fertility than their co-ethnics in Uzbekistan[14]. These results may be influenced by the anti-natalist policy practiced in Uzbekistan. On the other hand, the prolonged period of societal turbulence could have left Tajikistan lagging behind its neighboring countries in terms of

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[13] In Kyrgyzstan the estimated differences between Kyrgyz and Uzbeks are significant at the 0.05 level and those between Kyrgyz and Russians at the 0.001 level. In Tajikistan the differences between Tajiks and the other two ethnic groups (Uzbeks and Russians) are both significant at the 0.001 level.
[14] The difference between Tajiks in Uzbekistan and Tajiks in Tajikistan is highly significant.

provision of family planning services. The latter explanation appears plausible as the unmet need for contraception[15] in Tajikistan is the highest in the region: 23.7% vs 1.1% in Kyrgyzstan and 7.8% in Uzbekistan (MICS Final reports 2007).

Table 3 Children ever born, Poisson regression, women ever in union with no birth prior to first marriage/cohabitation, incidence rate ratios

N of observations		18734	
Time since first union formation			
0-4 years (ref.)	1		
5-9 years	2.36***		
10-14 years	3.27***		
15-19 years	3.97***		
20-25 years	4.57***		
25 +	5.34***		
Age at first union	0.98***		
Ethnicity		**Country**	
	Kyrgyzstan	Uzbekistan	Tajikistan
Kyrgyz	1.03**	-	-
Uzbeks	0.99	1 (ref.)	1.15***
Tajiks	-	0.98	1.24***
Russians	0.65***	0.66***	0.73***
Union status			
not in a union (ref.)	1		
in a union	1.40***		
Area			
rural (ref.)	1		
Urban	0.91***		
Capital	0.88***		
Education			
secondary or less (ref.)	1		
at least some higher education	0.92***		
Wealth ranking			
poor (ref.)	1		
Middle	0.95***		
Rich	0.91***		

Note: * p<0.05; ** p<0.01; *** p<0.001

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[15] In MICS unmet need for contraception is defined as the share of fecund women who wish to postpone the next birth or to stop childbearing but who for whatever reason do not use any method of contraception.

The results on control variables are not surprising. They indicate that women with lower educational attainment and lower household wealth ranking have comparatively high fertility. The same is true for women in rural settings. There is also a significant positive effect of being in a union[16].

To test the hypothesis on differential effects of minority group status for respondents belonging to higher and lower social strata we run models with interactions between our predictor variable and educational level and household wealth ranking, respectively[17]. Contrary to our expectations, the interaction with wealth ranking (not shown) brings no results that could lead to a conclusion that fertility of either social stratum is more responsive to the disadvantages entailed by minority group status. The interaction between the predictor variable and educational level (Table 4) also provide no support to the assumption that minority status may affect fertility of one educational group stronger than another. Some of the results are, however, noteworthy. They show that although fertility for all groups is higher among low educated women, the differences in number of children ever born by education are more pronounced in the country with the highest fertility. The comparatively high fertility of Tajiks in Tajikistan is determined by the behavior of low educated women.

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[16] These results should not be interpreted as reflecting directions of causality between controls and the outcome variable as information on socioeconomic characteristics, union status, and area of residence all refer to the time of the survey and not to the time of actual childbearing decisions. Thus, for instance, they do not allow us to give an answer to the question whether educational attainment has affected fertility, or whether the link was the reverse.

[17] The interaction with wealth ranking can be run only with a reduced sample which does not include Russians in Tajikistan, because in this group there are no respondents in the low income category. The interaction is also not statistically significant (i.e. adding the interaction does not result in a statistically significant improvement of model fit). LR test: chi2 (14)=8.14; p=0.882.

Table 4 Children ever born, Poisson regression, women ever in union with no birth prior first marriage/cohabitation, model with interaction between predictor variable and educational level, incidence rate ratios[18]

	no higher education	at least some higher education
Kyrgyz in Kyrgyzstan	1.03**	0.95*
Uzbeks in Uzbekistan	1 (ref.)	0.96
Uzbeks in Kyrgyzstan	0.99	0.91
Uzbeks in Tajikistan	1.15***	1.03
Tajiks in Tajikistan	1.25***	1.03
Tajiks in Uzbekistan	0.98	0.96
Russians in Kyrgyzstan	0.64***	0.62***
Russians in Uzbekistan	0.65***	0.64***
Russians in Tajikistan	0.72**	0.69**

Note: * p<0.05; ** p<0.01; *** p<0.001

Controlled for union duration, age at first union, current union status, area of residence, and household wealth ranking.

As noted in the methods section of our paper, for Tajiks and Uzbeks in Tajikistan and Uzbekistan our data allow us to perform an analysis where the effects of country of residence, ethnicity, and group status can be estimated with separate dummy variables. The results of this analysis are presented in Table 5. They indicate that all three factors exert significant independent influence on fertility. Ethnic minorities, other things equal, have somewhat lower fertility than majority populations (5% difference between groups). The country effect is considerably stronger; the incidence rate for Tajikistan is 21% higher than for Uzbekistan. There is also a significant yet modest effect of ethnicity: estimated rates are 3% higher for Tajiks than for Uzbeks.

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[18] The interaction is statistically significant. LR test: chi2 (8)=17.50; p=0.025.

Table 5 Children ever born, Poisson regression, women ever in union with no birth prior to first marriage/cohabitation, Uzbek and Tajik women in Uzbekistan and Tajikistan, incidence rate ratios

N of observations	13757
Ethnicity	
Uzbeks	1
Tajiks	1.03*
Country	
Uzbekistan	1
Tajikistan	1.21***
Status	
majority	1
minority	0.95***

Note: * p<0.05; ** p<0.01; *** p<0.001

Controlled for union duration, age at first union, current union status, area of residence, education, and household wealth ranking.

Finally, we test whether the "characteristics" explanation is relevant for our results. This is done by re-estimating our models without controlling for the effects of respondent's socio-demographic characteristics (results not shown). However, the role of these controls turns out to be marginal: The effects of group status, ethnicity, and country of residence remain largely the same.

Fertility intentions

Table 6 presents odds ratios from a logistic regression model in which we analyze the intentions to have another child. We start the discussion of results with the effects of our main predictor variable, first focusing on the odds of co-ethnics across neighboring countries and then on the odds of different ethnicities within a particular country. With regard to co-ethnics across countries, our results detect pronounced and statistically significant differences between groups[19]. The direction of the association between group status and fertility intentions, however, is not uniform. Whereas Uzbeks abroad appear to be more likely to want another child than Uzbeks in

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[19] The difference between Tajiks in Tajikistan and Tajiks in Uzbekistan is significant at the 0.01 level.

Uzbekistan, the opposite holds for Tajiks. For both Tajiks and Uzbeks the odds of wanting another child are higher in Tajikistan than in Uzbekistan. This is in line with the results of our previous section which indicated that the higher achieved fertility for these groups was linked to Tajikistan as a country. Within-country comparisons show that titular ethnicities in Kyrgyzstan and Uzbekistan have higher odds of wanting another child than the ethnic minorities in these countries. In Tajikistan, members of the titular ethnic group instead appear somewhat less likely to want another child than minority Uzbeks; this difference is, however, not statistically significant[20]. Among all population groups considered in our study, Kyrgyz in Kyrgyzstan have the highest odds of wanting another child followed by Uzbeks in the same country. We do not have a ready explanation to this finding.

Not surprisingly, Russians – the group with the lowest achieved fertility – are also less likely to want another child than are representatives of the indigenous ethnicities of Central Asia. This holds for all three countries. Apart from the disadvantaged position that is linked to being a minority group, religious and cultural differences likely play a role in forming this gap between Russians and Asians.

The results on control variables suggest that parity (number of live children) has the strongest effect on fertility intentions. The odds of wanting another child declines with increasing parity. The sex composition of children born also plays a substantial role; our results suggest a strong preference for male offspring. This pattern has also been detected in a large number of studies on other settings, mainly in Asia (see, for example, Li and Cooney 1993 for China; Haughton and Haughton 1998 for Vietnam; Andersson et al. 2006 and Andersson, Hank, and Vikat 2007 for Finland; Pande and Astone 2007 for India; Billingsley 2011a for Armenia and Moldova). In our case, the odds of wanting another child is 61% higher for women who have no son(s). Union status has a strong effect as well. The odds ratios are almost four times higher for married or cohabiting women than for women who were "not in a union". Women residing in urban settings are less likely to want another child than rural dwellers, yet the results by area of residence are significant only for the capital cities. More educated women have higher odds of wanting another child than lowly educated women. The household wealth ranking does

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[20] The majority-minority differences in various within-country comparisons are highly significant in Kyrgyzstan but not significant in Tajikistan.

not appear to play a substantial role in influencing fertility intentions: the corresponding estimates are not statistically significant.

Table 6 Logistic regression results for wanting another child, odds ratios

N of observations		15661	
months since last birth	0.98***		
months since last birth^2	0.99***		
age at first birth	1.11		
Ethnicity		**Country**	
	Kyrgyzstan	Uzbekistan	Tajikistan
Kyrgyz	2.77***	-	-
Uzbeks	1.54***	1 (ref.)	1.38***
Tajiks	-	0.79	1.22**
Russians	0.74*	0.48***	1.03
Parity			
one child (ref.)	1		
two children	0.15***		
three or more children	0.02***		
Sex composition of children			
has no son (ref.)	1		
has at least one son	0.39***		
Union status			
not in a union (ref.)	1		
in a union	3.93***		
Area			
rural (ref.)	1		
urban	0.94		
capital	0.79**		
Education			
secondary or less (ref.)	1		
at least some higher education	1.32***		
Wealth ranking			
poor (ref.)	1		
middle	1.08		
rich	1.08		

Note: * p<0.05; ** p<0.01; *** p<0.001

To test whether the effect of minority status differs between upper and low social strata we fit models that include an interaction of our main predictor variable with educational level and wealth ranking. Neither of these models

produced any results that support the assumption on stratum-specific effects of minority status or other interesting or consistent results. The interaction with wealth ranking is not statistically significant.

Finally, like in the previous section we estimate our model with the sample restricted to Tajiks and Uzbeks in Tajikistan and Uzbekistan. The obtained results (Table 7) show a strong country-specific effect and a less pronounced effect of ethnicity. The minority status again appears to be weakly negatively correlated with fertility intentions, yet the corresponding estimate is not statistically significant. The country effect with regard to fertility intentions may perhaps stem from country-specific economic benefits of children. In Tajikistan – the poorest country in the region – the use of child labor is higher than in the neighboring countries[21].

Table 7 Logistic regression results for wanting another child, Uzbek and Tajik women in Uzbekistan and Tajikistan, odds ratios

N of observations	11336
Ethnicity	
Uzbeks	1
Tajiks	0.82*
Country	
Uzbekistan	1
Tajikistan	1.53***
Status	
majority	1
minority	0.93

Note: * p<0.05; ** p<0.01; *** p<0.001

Controlled for time since last birth (linear and squared), age at first birth, parity, sex composition of living children, union status, area of residence, education, and wealth ranking.

Again, we tested for the importance of socio-economic characteristics in explaining fertility differentials between majority and minority groups. We

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[21] About 6.4% of children of ages 5 to 11 in this country are involved in domestic and other, mainly unpaid, work as compared to 4.3% in Kyrgyzstan and 2.8% in Uzbekistan. Among children aged 12 - 14 the share of working children in Tajikistan is much higher – 18.1%. For Kyrgyzstan and Uzbekistan the corresponding figures are considerably lower – 2.2 and 0.3%, respectively (MICS Final reports 2007). In MICS children aged 5-11 are classified as involved in child labor if during the week preceding the survey they had at least one hour of economic work or 28 hours of domestic work. For older children – aged 12-14, the definition of child labor is different, they are considered as child laborers if they had at least 14 hours of economic work or 28 hours of domestic work per week.

found no major differences in the effects of ethnicity, country of residence, and group status between our models with (Tables 6-7) and without (results not shown) such controls.

Conclusion

Group differentials in fertility have been a long-standing topic in demographic research. Yet fertility divides by racial, ethnic, and religious groups have usually been analyzed within a single-country context. Our study improves on research designs by employing an approach that allows for intra- as well as cross-country comparisons of fertility behavior. We studied the ethnic-specific fertility in terms of children ever born and fertility intentions in three neighboring Central Asian countries: Kyrgyzstan, Tajikistan, and Uzbekistan. We were thus able to compare the fertility of co-ethnics across the borders of these countries. Our main purpose was to test the minority status effect on fertility. Our study extends previous single-country analyses of different ethnic groups: It allows us to disentangle the effect of minority status from the effect of cultural factors linked to ethnicity and of country of residence.

Our study results provide some support for the assumption of an independent effect of minority-group status on fertility. Both the number of children ever born and the intentions to have another child appear to be negatively correlated with minority status. However in both cases the estimated effect of minority status is modest. Further, we found no consistent evidence that minority status relate differently to the fertility behavior of upper and lower social strata.

In contrast, our study shows a very strong effect of country of residence on achieved fertility and fertility intentions. With regard to achieved fertility this may relate to differences between countries in the advancement of family planning programs and availability of contraceptive services, with regard to fertility intentions it may indicate differences between countries in economic benefits of having children. Ethnic divides in numbers of children ever born are mainly manifested in clear differences within each country between Russians and ethnicities of Asian origin.

Evidently, national borders appear important in defining fertility differentials across Central Asia. This finding relates nicely to historical research on Western Europe that demonstrated an increasing role of nations

at the expense of ethnicity in shaping fertility differentials in Europe (Watkins 1990, 1991). In the context of Europe the increasing demographic homogeneity at the country level was explained by increased social integration within nations. However, the validity of a mechanism of this kind for Central Asia seems somewhat questionable. The post-Soviet political development in the region placed great emphasis on ethnicity in state- and nation-building; this likely rather impeded the process of social integration. For future research, it would be interesting to keep following changes over time in social developments in the region and how they relate to its demographic diversity.

Acknowledgments

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