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Reproduction in Upheaval: Crisis, Ethnicity, and Fertility in Kazakhstan

Victor Agadjanian, Premchand Dommaraju and Jennifer Glick

Abstract

This study contributes to the literature on demographic adjustments to societal crises by examining ethnic-specific probabilities of having first, second, and third marital births in late-twentieth-century Kazakhstan. Discrete-time logit models, employing data from the 1995 and 1999 Kazakhstan Demographic and Health Surveys, are fitted. The results show that the probability of first birth responded to societal cataclysms of the post-Soviet transition, but this response was most manifest and enduring in the ethnic group that had been most demographically advanced and that also found itself most politically and economically vulnerable. While ethnic differences in the probability of second and third births were generally more pronounced than in the probability of first birth, the pace of its post-Soviet decline was relatively uniform across all ethnic groups.

Keywords: fertility; ethnicity; Former Soviet Union; Kazakhstan; Central Asia; societal crisis

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INTRODUCTION

Demographers commonly observe that long-term social and structural changes lead to demographic changes over time and across population segments. It is much less clear, however, whether or to what extent dramatic and relatively sudden political and economic upheavals affect demographic choices and outcomes. There is a small but growing literature that examines temporary and even prolonged deviations from the gradual path of demographic change in response to dramatic societal cataclysms such as wars, droughts, famines, political strife, and economic crises (e.g., Agadjanian and Prata 2002; Caldwell 2004; Festy 1984; Lindstrom and Berhanu 1999; National Research Council 1993; Palloni, Hill and Pinto 1996; Winter 1992). Anthropological literature shows that behavioural responses to such emergencies, while rational in essence, are culturally predicated and framed: individuals and groups mobilize and adjust their cultural resources to protect their lives and well-being (Boehm 1996). However, fertility adjustments to such crises are neither universal nor consistent (Hill 2004). Moreover, establishing causal links between upheavals and demographic outcomes remains a challenging task, largely because of the difficulty in separating the effects of these upheavals from secular demographic trends.

The inherent difficulty of disentangling secular trends from responses to societal upheavals is further magnified by ethnic and religious divisions and tensions that increasingly accompany political and economic changes in today's world. Thus within a diverse society different groups may not be uniformly impacted by such upheavals and therefore may not exhibit the same demographic responses. In this study we examine these complexities by analyzing how members of different ethnic groups in Kazakhstan adapted their reproductive behaviour to radical and multidimensional societal transformations. Kazakhstan, once part of the USSR, is a vast yet sparsely populated country of some 15 million that became an independent nation in 1991. In the past two decades, Kazakhstan experienced multiple dramatic changes effected by

the reforms in late Soviet years, the Soviet Union's subsequent collapse, the country's ascension to independence and its transition from a centrally-planned to a market economy.

Kazakhstan is a multiethnic nation whose contemporary ethnic palette has been formed primarily through population movements. The migration of ethnic Slavs into the territory of today's Kazakhstan is a centuries-old process, but that process reached a particularly large scale during the Soviet era, when residents of the European part of the USSR were encouraged by the Soviet government to move to Kazakhstan to partake in its economic modernization, or, as was the case of Volga German in 1941 and a few other "punished" ethnic groups after the end of World War II, were forcibly transplanted there by Stalin's regime. By the time of the last All-Soviet population census of 1989, Russians and other groups of European origin constituted more than half of Kazakhstan's population (USSR Census 1996).

The Perestroika reforms launched in the mid-1980s and then the late-Soviet and early post-Soviet transition in Kazakhstan, as in most other former Soviet Republics, set off dramatic political and economic liberalization but also triggered an economic downturn and political instability, exacerbating insecurities of the majority of the country's population (Olcott 2002; Pomfret 1999). The new nation's Gross National Income (in purchasing power parity, 2005 international \$) dropped from 4,270 in 1991 to 3,290 in 1995, recovering to 3,570 in 1998 (World Bank 2006). In addition to socioeconomic challenges in the years preceding and following its independence, Kazakhstan experienced considerable ethnic tensions, primarily between indigenous Kazakhs and descendants of European-origin settlers and forced migrants, to whom hereafter we will also refer as Europeans. The growing political and sociocultural discomfort of Europeans resulted in them being greatly overrepresented in massive out-migration from Kazakhstan that accompanied and followed the collapse of the Soviet Union and the young nation's early post independence history. Thus net out-migration jumped from the already high 11.4 per thousand of population in 1992 to 25.2 per thousand in 1994. Only toward the end of

the first post-Independence decade out-migration subsided with net out migration dropping to 16.4 per thousand by 1997 (computed from ILO 2006).

The economic challenges and ethnic tensions that surrounded the downfall of the Soviet Union and their implications for migratory patterns and trends have attracted considerable attention in the literature (e.g., Becker et al., 2003; 2005; Demakov 1997; Esenova 1996; Vitkovskaya 1998). Parallel changes in fertility have also been well documented (Academy of Preventive Medicine and Macro International 2000; Agadjanian 1999; National Institute of Nutrition and Macro International 1996). Thus according to estimates derived from the data from Kazakhstan's second Demographic and Health Survey (KDHS), between 1989, the year of the last Soviet Census, and 1999, the year in which KDHS was conducted, Kazakhstan's total fertility rate (TFR) declined from 3.6 to 2.5 children per woman, or by 29 per cent (Academy of Preventive Medicine and Macro International 2000: 47). The vital statistics data point to an even more dramatic drop in TFR—to 1.8 children per woman in 1999 (Becker and Seitenova 2006).

Here, we view reproduction as a potentially important demographic mechanism through which individuals may adjust to dramatic changes in their environments. The conventional demographic wisdom suggests that in societies where childbearing and marriage are closely related, the postponement of the onset of childbearing would typically be achieved by delaying marriage (Caldwell 2004). Entry into marriage is an undeniably important adjustment mechanism, and we examine its dynamics in Kazakhstan in another study (Dommaraju and Agadjanian, n.d.). Based on prior research (Agadjanian 1999), however, we argue that in rapidly changing settings such as Kazakhstan, where norms regarding desired fertility erode more rapidly than the social value of marriage, one should also examine postponement of the onset of childbearing within marriage. Moreover, focusing on reproduction within marriage produces a more direct and therefore less biased measure of fertility adjustment than looking at timing of marriage, which can also be affected by considerations and constraints directly unrelated to reproduction. Finally, restricting the analysis to post-marriage adjustments helps reduce the

selection bias due to migration, as single people are generally more likely to migrate, alone or as part of their parental households, than are married people.

In a low-fertility setting like Kazakhstan, fertility adjustment mechanisms are typically engaged in transitions to first, second, and third births, as higher-order births are rare even in “normal” times. However, to capture the workings of these adjustment mechanisms more reliably one must look at fertility dynamics through a wider temporal lens—starting well before any signs of the crisis were noticeable and ending after the peak of the “crisis” had passed and a socioeconomic and political stabilization began to take hold. Moreover, one has to examine whether population segments with different background characteristics and divergent stakes in the ongoing societal transformations engage these adjustment mechanisms differently. Although Kazakhstan’s social and demographic experience is unique in several respects, we believe that an examination of this experience will help understand demographic processes in many other developing settings where swift and radical societal transformations are underway.

CONCEPTUAL MODEL

In building our conceptual model, we start with the classical demographic transition theory and its more recent modifications, which assume the universality of fertility decline while also acknowledging differences in how this decline is shaped across time, place, and population segments (Kirk 1996). To further refine and contextualize this general assumption we engage the literature on demographic trends in the Soviet Union and its successor states as well as in other countries that once constituted the Soviet block. Numerous studies have documented dramatic drops in fertility in countries of the former Soviet block following the downfall of Communism (e.g., Adler 1997; Barkalov 2005; Becker and Hemley 1998; Eberstadt 1994; Heleniak 1995; Witte and Wagner 1995). Yet it has also been argued that the fertility “crises” in those countries have represented their specific pathways to low and very low fertility patterns and levels and that these pathways are compatible with their earlier, pre-“crisis” demographic

development (Conrad, Lechner and Werner 1996; Kharkova and Andreev 2000; Kohler and Kohler 2002; Sobotka et al., 2003; Zakharov 1999).

While the literature points to considerable variation across different countries of the former Soviet block (Perelli-Harris 2005; Sobotka 2003), within-country diversity is also substantial (e.g., Zakharov and Ivanova 1996), and it is this diversity to which we turn our attention. Previous research on Kazakhstan and other Central Asian societies, however limited, has furnished evidence of considerable and enduring ethnocultural differences in such matters as family formation, parity progression, and recourse to induced abortion (Agadjanian 1999; 2002; Agadjanian and Makarova 2003; Agadjanian and Qian 1997). However, in the context of multiethnic post-Soviet Central Asia, within-country differences in fertility levels and reproductive behaviour could be linked not only to group-specific demographic history but also to unique political and economic stakes of different population segments. Thus European-origin groups, more advanced on the path of the fertility transition, are also the part of Kazakhstan's population that was made particularly vulnerable by the disintegration of the Soviet empire. Although Central Asia's Europeans were not a politically and economically privileged group in Soviet times, at least not in the two decades leading to the empire's demise, the Soviet State did ensure them relative ethnic equity and stable livelihoods (Davis and Sabol 1998; Tishkov 1994). The collapse of the Soviet Union and the mounting indigenist claims of the native elites upset the ethno-political balance and exposed Europeans to growing hostility and discrimination. The increasing political vulnerability of Europeans was compounded by rising economic uncertainties. In the Soviet era, Europeans were disproportionately concentrated in state-owned heavy industry, while native groups preferred employment in administration, agriculture, services, and small commerce. Heavy industry, particularly its core military-industrial complex, was particularly hard hit during the economic crisis of the late Soviet and early post-Soviet years. In contrast, services and commerce expanded rapidly. Hence native groups in Central Asia, especially the titular ethnicities in the newly emerged nations, while also facing economic

hardships and uncertainties in the wake of the Soviet demise, were generally in more advantageous political and economic positions than were Europeans (Agadjanian 1999; Agadjanian and Makarova 2003; Tishkov 1994).

The political history and post-independence position and behaviour of Europeans in Central Asia can be seen through the prism of the “minority-group status” hypothesis, which posits that socially disadvantaged ethnic, religious, or other minorities tend to adjust their demographic behaviour to maximize their security and/or social mobility (Goldscheider and Uhlenberg 1969; Bean and Marcum 1978; Kennedy 1973). Although empirical support for the minority-group status effect remains mixed, studies that do directly measure attitudes suggest that group-specific cultural norms, independent of socioeconomic status, influence the manner in which individuals from different backgrounds progress through the life course and especially family formation and childbearing (Astone and Upchurch 1994; Bean and Swicegood 1985; East 1998; Trent 1994).

Adapted to Soviet and post-Soviet Kazakhstan, the minority-group status perspective guides expectations about that country’s cross-group variations in reproductive behaviour and outcomes rooted in groups’ unique socio-political circumstances and constraints. In addition, the application of the minority-group status lens can address the perennial challenge of research on crisis and fertility—that of disentangling the impact of the “crisis” from longer-term secular fertility trends. Thus ethnic-specific deviations from these “normal” trends in the time of the post-Soviet crisis could help both refine and enhance the argument about demographic adjustments made in response to this crisis.

A fusion of the conventional demographic transition assumptions, the crisis-and-fertility literature, and the minority-group status perspective produces the following general conceptual model. First, we expect that the population under study and its various segments should exhibit long-term fertility trends and ethnic-specific differentials reflecting their stages in the demographic transition. However, against this background of long-term continuity and period-

independent differentials, we also expect to detect adjustments to the late-Soviet and post-Soviet crisis. Importantly, that “crisis” was a complex and protracted process of actual and perceived deterioration of standards of living, resulting from a sequence of relatively discrete events and developments (e.g., the proclamation of independence, consumer goods shortages, rapid inflation, political stalemates, etc.). We therefore expect to capture the fertility repercussions of at least some of these events and developments. Finally, guided by the minority-group status perspective, we expect that these fertility adjustments will differ across groups with different levels of political comfort and social opportunities.

These fertility adjustments should take place both at the onset of childbearing and at its more advanced stages. Yet when the normative expectation of having a child shortly after marriage is still strong—as it was in the 1990s in Kazakhstan—any postponement of a first birth is more likely to happen in response to specific, discrete challenges and therefore should be short-lasting and easily reversible. In contrast, at more advanced stages of marital childbearing fertility adjustments to perceived adversity and uncertainty should be more pronounced and longer-lasting.

Different ethnic groups within Kazakhstan’s population had different political stakes in the process of transition from Soviet to post-Soviet rule. Therefore, we also expect that the demographic adjustments of the groups that perceive their position as politically vulnerable, such as the European-origin population, will be most noticeable. In contrast, the indigenous Kazakh population may have seen the post-Soviet changes as politically beneficial—or at least may not have seen any group-specific threats, comparable to those sensed by Europeans, originating from those changes. Accordingly, Kazakhs’ fertility adjustments to the political and economic challenges of late- and post-Soviet years should be less noticeable. Yet because of large-scale Russification of the indigenous population during the Soviet era, we also expect to find differences within the titular ethnic group. Specifically, Kazakhs who are more culturally Russified, while largely shielded from political anxieties by their titular ethnicity, may exhibit

patterns of reproductive reactions that are at least to some extent similar to those of Europeans because of a similarity of demographic backgrounds. In comparison, Kazakhs who are less Russified, will be both least politically sensitive to post-Soviet shocks and least demographically “prepared” to adjust their fertility to them. Finally, given the historical ethnic differences in the pace of fertility decline and in the context-specific cultural meaning of first, second, and third births, we expect these differences between Europeans and Kazakhs and within Kazakhs to be most pronounced in the transition from second to third birth, followed by transition from first to second birth.

DATA AND METHODS

We use pooled data from the 1995 and 1999 Kazakhstan Demographic and Health Surveys (KDHS-1 and KDHS-2) women’s files for our analyses. The KDHS interviewed nationally representative samples of Kazakhstani women aged 15 to 49: 3771 in 1995 and 4800 in 1999. The standard DHS women’s individual questionnaire used in both surveys allows for direct inter-survey comparisons. Both KDHS collected information on respondents’ ethnic and socioeconomic backgrounds, timing (month and year) of first marital union, current marital status, complete pregnancy and birth histories (month and year), as well as a variety of health data. The relatively high educational level of Kazakhstani women instils confidence in the quality of respondents’ recall of timing of reproductive events. Despite their unprecedented scope and quality, however, the KDHS data have some important limitations, such as the relative paucity of socioeconomic and ethnocultural measures, which constrains our analyses. Importantly, however, the time span covered by our data includes the period of pre-“crisis” stability, the period when the Soviet system swiftly and inexorably unravelled, and at least the beginning of the period of post-“crisis” socio-political and economic stabilization.

To examine trends in fertility with the retrospective data at hand we use an event-history approach. This approach allows us to establish general and ethnic-specific trends in outcomes

of interest over more than two and a half decades. The quarter-century under consideration includes a period of stability and predictability (up to the mid-1980s), the period of reforms and increasing political and socioeconomic uncertainty that followed Gorbachev's ascension to power in 1985 and culminated in the break-up of the USSR in 1991, Kazakhstan's early independent years, marked by a vertiginous and generalized economic decline, and the first years of gradual political stabilization and socioeconomic recovery. This approach also allows us to examine whether some potentially shocking political and economic developments and events introduced any short-term "bumps" in fertility trends. Among such developments and events that could have been captured within the time horizon of our data are: the 1986 ethnic riots, the 1989 proclamation of Kazakhstan's sovereignty and of Kazakh as the state language, the 1991 declaration of independence, Kazakhstan's secession from the Russian ruble zone and introduction of national currency in 1993, and the political tension that started with the election of Kazakhstan's second parliament in 1994 and culminated in March 1995 with the dissolution of the parliament by a presidential decree, followed a few months later by the adoption of a new Constitution reiterating the pre-eminence of the Kazakh language and the rejection of dual citizenship. While different in nature, magnitude, and duration, these discrete shocks were all part of a process of escalating uncertainties and insecurities in late-Soviet and early post-Soviet period. Importantly, as was stated earlier, we assume that these shocks were more traumatic for the non-titular population of Kazakhstan, especially the European-origin population, and therefore expect that the related fertility bumps, if noticeable, will be more pronounced among that demographic segment.

Statistical Model

Our analysis focuses on marital fertility. The KDHS data do not allow us to distinguish whether a respondent's first union was a formally registered marriage or non-formalized cohabitation, known throughout the Soviet and post-Soviet world as "citizen marriage" (*grazhdanski brak*, in

Russian). However, we can estimate from the KDHS the share of “citizen marriages” among current unions. Thus only 3.7% of KDHS-1 respondents currently in union were in “citizen marriages” (or “living with a man,” in the wording of the DHS questionnaire, which, like “citizen marriage,” does not necessarily imply sharing permanent residence). This share declined to 2% in KDHS-2. If we exclude non-first unions, the share of current “citizen marriages” among all unions drops even lower—to 1.8% in KDHS-1 and 0.8% in KDHS-2. Even allowing for some underreporting of unregistered unions, the prevalence of “citizen marriages” was negligible in the period under observation. We therefore treat all first unions as marriages in our analysis.

Our analysis excludes births that occurred before first marriages (1.3% of all first births reported by ever-married women) because such births in end-of-century Kazakhstan, unlike in western societies, were rarely planned and therefore cannot be viewed as part of individuals’ family strategies comparable to births within marriage. Our analysis also excludes births to never married women (0.9% of all births), which were also relatively rare at the time and, as we assume, were driven by different motivations and constraints than was marital fertility. We also recognize that the focus on births misses some conceptions that were intended to lead to births but were not successfully carried to term. However, we assume that in a setting where both unplanned conceptions and induced abortion are common, birth is a better indicator of conscious reproductive choice than conception. Although the KDHS did not collect detailed marital history and therefore do not allow us to ascertain marital status at any point in time since first marriage for all women, divorce was still relatively uncommon at the time (about 7% of KDHS-2 were divorced or separated at the time of the survey) and childbearing by divorcees was extremely rare. We therefore assume that all ever-married women who reported births after first marriage had those births within a marital union, either first or not.

The dependent variable is the odds of having a birth in a given year since marriage (for first birth) or since previous birth (for second and third births). Our main predictors are calendar year and ethnicity. For ethnicity, instead of commonly used ethnic markers, such as Russians or

Kazakhs, we opt for a more context-attuned approach. First, we fuse all the European-background groups—Russians (a vast majority), Ukrainians, Byelorussians, Germans, and other smaller groups originating in the European part of the former Soviet Union—into one category of “Europeans”. These groups typically use Russian as their first (and typically, only) language and in political and popular discourse are often summarily referred to as Russian-speakers (*ruskoyazichnie*, in Russian), a term that stresses the importance of the Russian language, rather than ethnicity, as their primary ethnocultural identifier (Barrington 2001; Laitin 1998). The linguistic unity as well as the similarity of ethnic, cultural, and religious roots and of demographic characteristics among various subgroups of Europeans outweigh their differences. Second, to take into account the lasting imprint of Russian-European sociocultural presence in Kazakhstan, we divide ethnic Kazakhs into two categories according to the degree of Russian-European cultural influence (Russification). While intermarriage between natives (overwhelmingly Muslims) and non-natives (mainly of Russian Orthodox background) in Kazakhstan was not widespread even in the heyday of Soviet internationalism, considerable cultural Russification of Kazakhs, most visibly manifested in language use, did take place during the Soviet years. Historically, the degree of Kazakhs’ Russification has been higher in urban centres, where the Russian language and Russian-based education have been particularly influential. The Russian language has remained widely used after independence, despite the government’s efforts to reduce its role and promote Kazakh (Arenov and Kalmykov 1997; Fierman 1998).

We use the interview language—Kazakh or Russian—chosen by respondents (all KDHS interviewers were bilingual and respondents could choose to be interviewed either in Kazakh or Russian) as the criterion for our classification: Kazakhs who chose to be interviewed in Russian (about 40% of all ever-married Kazakhs) are considered more Russified, whereas Kazakhs selecting Kazakh as the language of interview are considered less Russified or non-Russified. We realize that the choice by ethnic Kazakh respondents to be interviewed in Russian may

have been influenced by a number of factors (including, perhaps, the predisposition of some interviewers). Importantly, Kazakhs making that choice cannot be seen as culturally and linguistically equivalent to “Russian-speakers”: most of them probably commanded Kazakh at least at some level (which contrasts with monolingualism of most Europeans) but were more comfortable answering formal survey questions in Russian. The choice of language of interview by Kazakhs is therefore used here not as a label for ethnicity in a narrow sense of the term but as a proxy for ethnocultural identity unique to the historical circumstances of the cultural periphery of the former empire.

This approach proved relevant to sociodemographic differentials in Kazakhstan in previous research (Agadjanian and Qian 1997; Agadjanian 1999; 2002) and better captures *real* (as opposed to ascribed) ethnocultural differences within Kazakhstan’s population, that have important implications for political and economic stakes of each of the three groups. Thus Europeans can be seen as a group that became increasingly disadvantaged on all counts—culturally, economically, and politically—with the decline of the Soviet Union and the advent of independence. Russified Kazakhs are the part of the dominant ethnos that initially benefited most from the reforms. After independence, because of their Russification, they have increasingly been losing their political and economic clout. In contrast, non-Russified Kazakhs, once at the bottom of the Soviet ethnosocial hierarchy, in independent Kazakhstan have been increasingly asserting their cultural, economic, and political claims. We use this variable as time-fixed, assuming that language-use preferences and corresponding cultural characteristics are established during childhood and adolescence. To sharpen our comparisons, respondents of unidentified ethnicity (c. 5.7%) and respondents belonging to ethnic groups that could not easily fit in the proposed trichotomy (c. 2.5%) are excluded from the analysis.

In addition to distinct cultural traits and politico-economic stakes, these three ethnocultural groups differ in their demographic backgrounds, especially in fertility matters: fertility diminishes as one moves from the non-Russified Kazakh to the European end of the ethnocultural

spectrum. This pattern is evident in ethnic-specific lifetime fertility computed from both KDHS and displayed in Table 1. Echoing the differences in lifetime fertility, the three groups align themselves along a similar continuum with respect to the length of the second and third birth intervals (in the first birth interval the differences are much smaller pointing to a normative importance of first birth that cuts across ethnic boundaries).

Table 1 about here

These fertility differences between European-origin and native populations of Central Asia are usually interpreted in modernizationist terms: Europeans' lower fertility is seen as a result of a more advanced stage of the demographic transition. Accordingly, the differences between the two Kazakh groups can be said to reflect different levels of modernization. The ethnic patterns of urban vs. rural backgrounds support the modernizationist perspective. In contrast, the education differentials among the three groups do not readily fit the assumption of a demographic modernization continuum. While the least educated group was, predictably, non-Russified Kazakhs, the most educated group is not Europeans but Russified Kazakhs, reflecting primarily the latter's greater involvement with institutions of higher learning. Although the ethnic-specific differences and the trends presented in Table 1 tell a useful story, that story is much less informative for our purposes than the account that the dynamic multivariate models proposed for our study will produce.

The statistical model predicting the probability of first (second, third) birth controls for age at marriage (at first birth, second birth) which is specified as linear and quadratic. Another control is woman's education which, reflecting the Soviet system, is broken down into three categories: general secondary or less; vocational, also known as specialized secondary (*sredneye spetsial'noe*, or *tehnikum*, in Russian); and some or complete higher. We also control for the type of area (rural vs. urban) where respondents spent their childhood (before age twelve) as a

proxy for the cultural and socioeconomic environment in which they were growing up (this indicator is preferred to current type of area of residence due to a more certain temporal and causal sequence). Controlling for area of childhood residence has an added importance in our analysis because the earlier mentioned association between the degree of Kazakhs' Russification and urban vs. rural background. In the second-birth models we replace age at marriage with age at first birth (linear and quadratic). To account for possible child gender preferences, in the second-birth models we also add the sex of first child as a control variable; in the third-birth model we instead control for whether or not at least one of the first two children is male. We also control for whether the previous child was alive or dead in the beginning of each year of exposure. Because marital disruption may considerably alter fertility preferences and diminish fertility, we control for whether or not a respondent ever experienced marital disruption in the second- and third-birth models (the KDHS do not report timing of divorce, separation, or widowhood). Finally, pooling data from different survey may be problematic. Although the KDHS used the same sampling approach, nearly identical instruments, and standard interview selection and training routines, differences in the quality of the two data sets may exist. To account for the influence of possible differences in data quality between the two surveys, all models also include a dummy variable for survey, KDHS-1 vs. KDHS-2.

Time is measured in years, as it is commonly done in analyses of fertility dynamics (e.g., Lewis and Raftery 1999; Schellekens and Van Poppel 2006). The use of the time scale specified in years (rather than in months) is also justified by the substantive interest of our study in the effects of macroeconomic and macropolitical transformations, which even in the context of such rapidly changing societies as post-Soviet Kazakhstan are gradual processes spread over long periods of time. To control for possible non-linearity in duration of exposure to risk of birth, we specify duration since marriage (first, second birth), as both linear and quadratic (we also test a specification of duration at risk as a set of discrete categories, but the results are not different from models with continuous specification). To account for right-censoring, we exclude

respondents who got married (had a first or second birth) seven or fewer months before the date of the interview (3.0%, 4.5%, and 2.3% of women are excluded in the analyses of probabilities of first, second, and third births, respectively).

Our general statistical model can be expressed as follows:

$$\text{logit}(p_{it}) = \beta_0 + \beta_1 I_i + \beta_2 I_{it} + \beta_3 P_{it} + \beta_4 T_{it} + \beta_5 S_i$$

for woman i in year of exposure t , where $p_{it} = P[Y_{it} = 1 \mid I_i, I_{it}, P_{it}, T_{it}, S_i]$; Y_{it} is 1 if woman i experiences a first birth (second or third birth) in her t^{th} year of exposure, and 0 otherwise; β_0 is the intercept, β_1 , β_2 , β_3 , and β_4 (in bold) are vectors of coefficients, and β_2 and β_5 are coefficients. I_i is a vector of time-invariant individual-level characteristics: ethnocultural identity, age at marriage (at first or second birth), area of childhood residence, education, and sex of first child (in the analysis of the probability of second birth) or having at least one son (third birth models), and experience of marital disruption. I_{it} is the only time-varying individual characteristic—survival status of first child (analysis of second birth) or second child (for third birth tests). P_{it} is a vector of dummy variables representing period effects in the form of historical years. These period variables are time-varying because women are differentially exposed to historical periods as they progress through the hazard of birth. T_{it} is the baseline hazard of birth representing years since start of exposure to risk of birth and specified as linear and quadratic terms. These covariates are also time-varying because they increment for each additional year of exposure to the risk of birth. Finally, S_i is a control for survey (KDHS-1 vs. KDHS-2). The models are fitted using the SAS software package (SAS Institute 2007).

Our analysis of temporal trends covers the period since early 1970s through 1998. For years before 1980 the number of observations is small and yearly patterns may be unreliable; in the models we therefore combine all the years up to 1980 into one category. The main focus of our analysis is the late 1980s and the 1990s, i.e., the years of the decline and collapse of the Soviet Union and the early post-Soviet period. The year of the dissolution of the U.S.S.R. and of

Kazakhstan's independence—1991—is the reference year. To make a more convincing argument about the influence of societal factors on the outcomes of interest we juxtapose trends in the outcomes of interest with trends in economic development, approximated by trends in Kazakhstan's Gross National Income in Purchasing Power Parity (GNI PPP) per head since 1990, which were closely paralleled by trends in net international migration (no comparable and trustworthy data for the preceding period are available). This juxtaposition is done for illustrative purposes: the data are insufficient for a formal test of the effects of changing macroeconomic (and macropolitical) conditions on birth probabilities. Finally, for each outcome we present and discuss estimated survival rates by ethnicity and cohort (marriage cohort for first birth, first-birth cohorts for second birth, and second-birth cohorts for third birth).

RESULTS

Transition from marriage to first birth

We start with the analysis of transition to first birth after marriage. Table 2 presents the odds ratios for four models—one for the overall pooled sample and one for each ethnocultural group. The results of the pooled model show that non-Russified Kazakhs had the highest probability of birth. However, the difference between them and Russified Kazakhs is not statistically significant. In contrast, Europeans were much less likely than non-Russified Kazakhs to have a first birth in any given year after getting married. Age at marriage displays a curvilinear effect: the odds of first birth increase and then decline as age at marriage rises. The place of childhood residence has a strong effect: other things equal, urban-background women, had a lower probability of first birth than did their rural-origin counterparts. Interestingly, however, the ethnic specific models attest that rural vs. urban background mattered only for Europeans. In comparison to area of childhood residence, education has no statistically significant effect (except for the puzzling increase in probability of first birth associated with secondary special education among Europeans).

Table 2 about here

We expected relatively little variation in the probability of first birth in response to the vicissitudes of the changing societal environment; whatever response we would detect was expected to be short-lasting. In the pooled model, the year effects presented in Table 2 show no statistically significant differences in probability of first birth in the 1980s and before, relative to 1991, the year of the dissolution of the U.S.S.R. and of Kazakhstan's independence. No statistically noticeable impact of the period surrounding Kazakhstan's 1991 independence, ostensibly the most radical political metamorphosis in Kazakhstan's recent history, can be discerned either. In fact, only some time after Kazakhstan's independence, most certainly since 1995, the probability of a first birth becomes significantly lower than in the independence year. However, when we fit ethnic-specific models, this pattern is clearly present only among Europeans (including a short rebound following the 1995 drop) supporting our expectation with regard to ethnocultural differences in response to post-Soviet economic and political challenges. Russified Kazakhs showed a somewhat similar trend: a drop in the odds of having a first birth in 1995 followed by a brief recovery but none of the effects reaches the conventional threshold of statistical significance. Finally, among non-Russified Kazakhs the post-Independence odds of having a first birth exhibit even less variation than among Russified Kazakhs.

Earlier we identified 1994 and 1995 as a politically tumultuous period in independent Kazakhstan—the period when the exacerbating collision between Kazakhstan's president and parliament led to a presidential decree dissolving the parliament and to the adoption of a new Constitution. Dramatic as they were, those political developments reflected the accumulation of sociopolitical tensions and economic insecurities that first emerged even before the dissolution of the USSR. If those developments indeed had an impact on entry into childbearing, the ethnic pattern of this impact fits the notion of differential political vulnerability rather than that of gradual demographic modernization. Thus the most politically vulnerable group, Europeans, reacted

strongly and protractedly, while the two less vulnerable groups, the Kazakhs were similarly unresponsive, despite being in different stages in the process of fertility transition.

For an easier grasp and interpretation of longer-term temporal trends we present the yearly predicted probabilities from the above models graphically in Figure 1. The predicted probability curves are smoothed as three-year moving averages. To highlight a connection between first-birth probabilities and the changing macroeconomic situation, Figure 1 also depicts trends in Kazakhstan's GNI PPP per capita since 1990. We should stress that this graph must be interpreted in conjunction with the significance levels of corresponding regression estimates from the models presented in Table 2.

Figure 1 about here

Figure 1 shows a relatively stable probability of first birth in all three groups throughout the 1980s. A slight downward trend among Europeans is discernible since before the time of independence. The decline greatly accelerated in the middle of the 1990s with a sign of stabilization toward the end of the observation period. In both Kazakh groups the probability of birth was less stable in the 1980s. Having increased somewhat toward the end of the Soviet period, it began to decline after independence (more obviously among Russified Kazakhs) stabilizing after the mid-1990s. Notably, the initial decline and subsequent stabilizations of predicted probabilities of first birth followed rather closely trends in Kazakhstan's macroeconomic performance (approximated by GNI PPP). By the end of the observation period both Kazakh groups displayed nearly identical probabilities of first birth—and very similar to those in the beginning of it. In contrast, the gap between the two Kazakh groups, on the one hand, and Europeans, on the other, grew considerably.

To offer a picture that is even less sensitive to the vagaries of individual years than three-years moving averages, the four graphs in Figure 2 depict overall and ethnic-specific survival

rates from first marriage to first birth estimated for four first-marriage cohorts—1972-80, 1981-85, 1986-90, and 1991-98 (to allow the youngest cohort sufficient exposure to risks of birth we limit the time span to seven years). In the overall sample, the survival rates remained nearly identical in the three oldest cohorts but increased noticeably in the youngest one. The breakdown by ethnicity shows, however, that this increase was largely concentrated among Europeans. Indeed, about fourteen percent of European women married between 1991 and 1998 were to remain childless at least seven years after her first marriage. In comparison, the cross-cohort variation was practically absent in either subgroup of Kazakhs.

Figure 2 about here

Transition from first to second birth

Table 3 presents the odds ratios from four models of predicting transition from first to second transition to second birth—one for the entire sample and one for each ethnocultural group. The overall, time-independent ethnocultural differences in the probability of second birth are much more noticeable than in the first-birth model. Reflecting the long-term trends of the fertility transition in Kazakhstan, these differences followed the expected pattern: a higher degree of “Europeanness” was associated with a lower probability of second birth. Other things equal, the odds of having a second birth among Europeans were only one-third of those among non-Russified Kazakhs, with Russified Kazakhs falling right in the middle. Not surprisingly, the probability of progressing to second birth was also negatively affected by education and urban background. The ethnic-specific models show, however, that the effect of education is least pronounced among non-Russified Kazakhs; childhood urban residence also mattered for the transition to second birth only among Europeans and Russified Kazakhs. Curiously, only Europeans display a statistically significant effect of sex of first child. Counterintuitive from the

cultural modernization perspective, this result is probably reflective of Europeans' lower fertility aspirations rather than some culturally-entrenched son preference.

Table 3 about here

Unlike the case of the first-birth transition, a precipitous decline in the probability of second birth started in the population as a whole immediately after the dissolution of the Soviet Union. As the overall model shows, the probability of second birth was significantly lower in each year following Kazakhstan's independence, dropping to an all-time low by the end of the observation span. In contrast, the previous years show no clear and statistically significant trends. The only possible exception is Europeans, among whom the odds of second birth show a brief rise in the mid-1980s, possibly reflecting the effects of pronatalist policies introduced in the first half of that decade (which seemingly had a much smaller impact on the generally higher-fertility native population).

The middle of the 1990s saw a marked drop in the magnitude of the probability of second birth relative to the reference year among both Kazakh groups; a major slump among Europeans started a bit earlier. Then, after a slight recovery the odds renewed their decline in all three groups. Toward the end of the observation period the odds of second birth slid well below the mid-1990s level among Europeans and Russified Kazakhs. In fact, the two groups registered their lowest respective probabilities of having second birth in at least a quarter-century (and most likely in their entire peacetime history). Among non-Russified Kazakhs the odds of second birth stabilized and even rose slightly by 1998, though remaining significantly below those in the reference year.

The smoothed longer-span temporal trend, graphically depicted in Figure 3, points to a modest rise of the probability of second birth in the middle of the 1980s, concentrated largely among Europeans. Compared to the trends in the probability of first birth, the post-

independence decline in the probability of second birth started earlier and was both more precipitous and consistent among all three groups. Remarkably, however, while the probabilities of second birth reached their historical lows by the end of the observation span, the pace of post-independence decline was similar across the three groups and the resulting differences were not much larger than the corresponding differences some ten years earlier. As in the case of first birth, the two Kazakh groups approached the end of the 1990s with nearly identical probabilities of second birth, both much higher than that among Europeans. Finally, as in with first birth, all three groups showed signs of stabilization of the probability of second birth toward the end of the period under observation, when the economic growth started to pick up.

Figure 3 about here

Figure 4 presents the estimated rates of survival from first to second birth for four first-birth cohorts regardless of ethnicity and for each of the three ethnocultural groups. Similarly to the case of transition to first birth, most dramatic changes happened in the last cohort, i.e., among those who had their first birth since the year of independence. Again, like in the case of first birth, Europeans displayed the most dramatic change (harbingered by a shift in late survival probabilities in the next-to-the-last cohort): more than two-thirds of European women who had a first birth in 1991 or later would not have had a second birth seven years later, compared to only about forty per cent of Europeans whose first birth occurred before Perestroika. Unlike the case of transition to first birth, however, we now see an even more dramatic difference between the last cohort and the three previous cohorts of Russified Kazakhs, as about forty-five per cent of women in that ethnocultural group who bore their first children after 1990 would not have had another live birth within seven years. Finally, among non-Russified Kazakhs relatively little inter-cohort variation could be observed.

Figure 4 about here

Transition from second to third birth

Table 4 displays the results of the models predicting the probability of transition to third birth. In the pooled model, the ethnocultural pattern is almost the same as in the second-birth model, but the ethnocultural differences are even more pronounced. As previously, education, type of childhood environment and sex composition of children significantly affect the probability of birth, but this time these effects are statistically significant in all three groups. As for the temporal trend, the decline of the probability of third birth started well before independence. While most pronounced among Europeans, this pre-independence decline was also noticeable among the Kazakh groups. Interestingly, the decline of probability of third birth slowed down in the end of the last Soviet decade but then resumed right after independence, accelerating in the mid-1990s, then briefly slowing down, and then resuming again. Notably, however, among Europeans the post-independence drop in the probability of third birth was not very large as that probability was already very low in the preceding decade. Yet, once again, in all three groups, but particularly among Europeans and non-Russified Kazakhs, the middle of the decade saw a noticeable, even if short, dip in the probability of third birth.

Table 4 about here

Figure 5 depicts smoothed ethnic-specific probabilities of third birth. Not surprisingly, the graph shows a considerable and almost continuous decline throughout most of the period of observation (with the exception of a few odd years) only among non-Russified Kazakhs—the group in which that probability was much larger than in the other two groups both in the beginning and in the end. The downward trend levelled off and even reversed itself toward the end of the observation period; despite a substantial decline, the probability of third birth

remained much higher among non-Russified Kazakhs than in the other two ethnocultural groups. Among Europeans, the third birth probability, already very low by the early 1980s, remained unchanged throughout most of that decade, started to decline toward its end, but levelled off after independence. Finally, Russified Kazakhs began and finished the observation span between the two other groups, as would be expected based on their middle-ground position in the process of demographic modernization. Notably, throughout all the years under examination their predicted average probability of having a third birth stood closer to that of Europeans than to that of their non-Russified co-ethnics.

Figure 5 about here

Figure 6 illustrates the pace of the decline of the probability of third birth in all three groups. Most notably, in none of them, the change was limited to the youngest cohort. In fact, among Europeans, most of the change occurred between the cohort of women who had their second children in 1981-85 and in 1986-90; in contrast the youngest cohort was hardly different from its predecessor. Likewise, the two youngest cohorts were very similar among Russified Kazakhs, but among them the biggest shift took place between the oldest and the following cohorts. Only among non-Russified Kazakhs the youngest cohort was noticeably different from the previous one, but the magnitude of change was comparable between two middle cohorts. In absolute terms, the change in the probability of birth across all four cohorts was most dramatic among non-Russified Kazakhs. Even so, more than fifty percent of non-Russified Kazakhs who had their second birth in the post-independence period would have proceeded to having a third birth within seven years. In comparison, less than forty percent of Russified Kazakhs and just about fifteen percent of Europeans would have done the same.

Figure 6 about here

DISCUSSION AND CONCLUSION

In this study we built upon the previous literature to look at the influence of socio-political and economic upheavals on fertility trends and patterns and to address the possibility that such upheavals impact different segments of a population and different aspects of fertility behaviour in different ways and measures. In an attempt to establish group-specific responses to dramatic societal changes in Kazakhstan triggered by the decline and collapse of the Soviet Union we applied three conceptual perspectives to examine three reproductive processes—progression to first, second, and third births among ever-married women. While similar in nature, these outcomes have different meanings in the context of advanced demographic transition. Thus our first outcome, progression to first birth after marriage, was expected to have little time-independent ethnic variation, relative long-term stability, and ethnically-uniform short-term sensitivity to post-independence societal shocks. The ethnic and temporal variation was expected to increase in transitions to higher-order births.

It turns out that we may have underestimated the demographic “maturity” of Europeans who appeared least likely to have a first birth after marriage, controlling for other characteristics. We also detected a relative stability of the probability of first birth in the pre-independence period and a decline in that probability after Kazakhstan’s independence. The results suggest that rather than the time surrounding the collapse of the former Soviet Union, the middle of the last decade of the century, marked by heightened political and economic uncertainty, became a turning point in the probability of having a first birth after marriage. However, this turning point manifested itself statistically only among Europeans, who were both more sensitive to such dramatic societal shifts and more demographically prepared to translate this political and economic sensitivity into postponement of first marital birth than the other two groups. In contrast, the decline of probability of first birth was much more modest (and statistically non-significant) among the two Kazakh groups. The obvious differences in lifetime fertility between

non-Russified and Russified Kazakhs did not extend to any appreciable differences in the timing of first marital births.

A growing disjunction between marriage and onset of childbearing among the European-origin population of post-Soviet Kazakhstan has been pointed out in the literature (Agadjanian 1999). Similar ethnocultural differences in transition from marriage to first birth between the titular group and the Europeans were found in urban Uzbekistan, Kazakhstan's neighbour (Agadjanian and Makarova 2003). Notably, our analysis shows that among Europeans the probability of first birth after marriage reached the historically lowest levels in the second half of the 1990s. In comparison, among the two Kazakh groups the probability of entry into marital childbearing by the end of the observation period was similar to that in its beginning. Both the differences between Europeans and Kazakhs and the similarities between the two Kazakh groups are therefore quite instructive.

The period-independent ethnocultural differences in the probability of second birth were, not surprisingly, much more noticeable than in the probability of the first birth and followed an expected pattern—a greater degree of “Europeanness” (and therefore a more advanced stage in fertility transition) was associated with a lower probability of second birth. As we expected based on the studies of fertility in other post-Communist settings, transition to second birth also proved more sensitive to the tumult accompanying the Soviet meltdown. The probability of second birth went tumbling down after the turn of the last decade of the century. Once again, this rapid and continuous decline was most noticeable among Europeans but this time the Kazakhs also showed a similar trend. However, as in the transition to first birth the two Kazakh groups did not differ much from each other, defying an expectation of differentials reflecting the two groups' respective standing in the process of fertility transition. Also, even though Europeans ended the period under observation with the lower probability of second birth than did either subgroup of Kazakhs, the *pace* of decline was, contrary to our expectations grounded in the minority–status group perspective, comparable in all three ethnocultural groups bringing

all three of them down to levels never observed before. The beginning of economic and social stabilization did not seem to do much to resuscitate the probability of second birth.

Finally, in the probability of transition to third birth the ethnic differences were even more salient than in the transition to second birth. In this case, however, non-Russified Kazakhs, the segment with highest overall fertility and therefore greatest potential for decline, reacted most clearly and protractedly. In the other two groups, among whom a third birth was becoming increasingly rare well before the collapse of the Soviet Union, the post-independence decline was less consistent. For all three groups, however, the middle of the 1990s, once again, stood out as the time of a dramatic plunge of third-birth probabilities. Also, even though all three ethnocultural groups approached the end of the observation span with probabilities of third birth unseen before, the relative positioning of the three groups by the end of the observation span remained remarkably similar to that in the beginning, approximating their long-term differentials in cumulative fertility. Notably, Russified Kazakhs stood much closely to Europeans than to non-Russified Kazakhs: shared demographic legacy proved more important in shaping this positioning than shared ethnopolitical fortunes.

The limitations of the retrospective data at hand do not allow for a more detailed and definitive examination of ethnocultural differences in reproductive responses to dramatic societal changes in Kazakhstan. First, the KDHS data do not offer a way to measure changes in surveyed women's socioeconomic characteristics during the observation period, and especially during the critical years around and after the collapse of the Soviet Union. Interestingly, however, as Kohler and Kohler (2002) found in Russia, socioeconomic hardships may not be associated with probability of birth. And second, the period covered by the KDHS leaves out the years of macroeconomic stabilization that began in earnest in Kazakhstan since the turn of the century. Kazakhstan's recent statistics point to a modest recovery of fertility rates in the early 2000s (Becker and Seitenova 2006), which, as in Russia and other parts of the former Soviet Union, may be due not so much to changes in desired family size as to delayed births (e.g.,

Vishnevsky 2006: 244-7). Another possible reason for rising fertility might be an upturn in marriage after a dip in marriage rates of earlier post-Soviet years (Becker and Seitenova 2006). We data at hand, we are unable to examine the nature of a possible rise in Kazakhstan's fertility, including any ethnocultural differences in that process.

Another limitation of our study stems from the already mentioned large net out-migration, primarily of Europeans, from Kazakhstan in the late 1980s and especially in the 1990s. We have no sound way to assess and account for a possible resulting bias. Ethnic, age, marital status, and parity-specific data on out-migration from Kazakhstan in the 1990s are not available, and the two KDHS, fielded after the peak of out-migration, do not have any pre-migration analogues to allow for an estimation of the selectivity of migration. We mentioned earlier that limiting our analysis to fertility behaviour of ever-married women reduces the migration selection bias because much of the selection effect is concentrated in the transition from singlehood to marriage. Nonetheless, one may suspect, for example, that the marked difference in survival to first marital birth between the youngest and the other cohorts of Europeans (Figure 2.4) had something to do with selective out-migration of Europeans because no such trend was apparent among the two Kazakh groups. However, if this were the case, Europeans would have displayed an equally distinct pattern in the transition from first to second birth. In reality, on this indicator, the youngest cohort of Europeans, a high migration-propensity group, and the youngest cohort of Russified Kazakhs, a low migration-propensity group, were similarly distinct from their respective older cohorts (Figure 4.3 and 4.4). As for the transition to third birth, the youngest cohort of Europeans was indistinguishable from the previous one (Figure 6.4). In any case, however, to seek a rigid distinction between European migrants and stayers in the context of post-Soviet Kazakhstan is not only empirically daunting but also conceptually implausible. Most Europeans who chose or had to stay in Kazakhstan after its independence were deeply psychologically affected by the exodus of their ethnic brethren and many surely contemplated the possibility of joining that exodus if forced by the circumstances or offered an opportunity.

These limitations notwithstanding our study produced informative and interesting results. Our approach and findings illustrate the importance of embedding reproductive dynamics within country-specific political, economic, and ethnocultural landscapes. Indeed, our results suggest significant group differences in the impact of societal upheavals across different types of fertility behaviour. However, our results also demonstrate the need to contextualize short-term variations in fertility behaviour within longer-term, secular fertility trends, thus establishing parallels with other cases of advanced demographic transition and thereby setting limits to “crisis” interpretations of reproductive changes in post-Soviet societies (cf. Kharkova and Andreev 2000; Kreyenfeld 2003; Kohler and Kohler 2002; Zakharov 1999). Finally, they call for an examination of different aspects of reproductive behaviour as these different aspects may be adjusted in different ways and to different degrees in the face of societal challenges.

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Table 1. Key descriptive statistics, KDHS-1 and KDHS-2, weighted (ever married women)

	KDHS 1995				KDHS 1999				KDHS 1995 + KDHS 1999			
	Non-Russified Kazakhs	Russified Kazakhs	Euro-peans	Total	Non-Russified Kazakhs	Russified Kazakhs	Euro-peans	Total	Non-Russified Kazakhs	Russified Kazakhs	Euro-peans	Total
Residence before age 12 (%)												
Urban	18.7	26.8	54.9	39.0	15.9	30.2	55.3	36.9	17.2	29.1	55.1	37.8
Rural	81.3	73.2	45.1	61.0	84.1	69.8	44.7	63.1	82.8	70.9	44.9	62.2
Education (%)												
Secondary or less	41.6	21.1	25.4	32.1	47.4	28.2	28.4	34.7	44.8	25.9	26.9	33.6
Secondary-special	41.8	49.8	57.0	49.7	37.2	45.9	52.9	45.9	39.3	47.1	54.9	47.6
Higher	16.6	29.1	17.6	18.1	15.4	25.9	18.7	19.4	16.0	27.0	18.2	18.8
Age at first marriage (mean, years)	20.7	21.6	20.0	20.4	20.8	21.5	20.2	20.7	20.8	21.5	20.1	20.6
Completed first birth interval (mean, months)	16.1	14.3	16.7	16.4	14.0	14.7	15.8	15.0	14.9	14.6	16.2	15.7
Completed second birth interval (mean, months)	26.3	37.3	47.3	38.0	25.8	33.5	50.4	36.9	26.0	34.7	48.8	37.4
Completed third birth interval (mean, months)	34.9	44.8	56.6	43.2	35.2	45.1	50.8	41.2	35.1	45.0	53.8	42.1
Children ever born (mean)	3.2	2.2	1.9	2.4	3.2	2.2	1.8	2.3	3.2	2.2	1.9	2.4
Total number in sample	822	396	1396	2886	1004	816	1430	3584	1827	1213	2826	6470
Percent in sample	28.5	13.7	48.4	100	28.0	22.8	39.9	100	28.2	18.7	43.7	100

Source: Kazakhstan Demographic and Health Surveys, 1995 and 1999

Table 2. Transition from first marriage to first birth (odds ratios)

Variable	All groups	Non-Russified Kazakhs	Russified Kazakhs	Europeans
Ethnocultural group				
Europeans	0.753 **			
Russified Kazakhs	0.897			
(non-Russified Kazakhs)	1			
Year				
1980	1.038	0.755	0.875	1.298
1981	0.852	0.688	0.936	0.925
1982	0.927	0.778	1.140	0.986
1983	1.077	0.886	1.165	1.205
1984	1.039	1.186	1.189	0.958
1985	0.932	0.711	1.068	1.081
1986	1.177	1.288	1.028	1.233
1987	1.082	0.929	1.155	1.230
1988	0.848	0.777	0.737	0.998
1989	0.951	0.749	1.203	1.057
1990	1.064	0.895	1.309	1.113
(1991)	1	1	1	1
1992	0.955	1.028	1.037	0.864
1993	0.914	0.895	0.775	1.067
1994	0.958	0.877	1.009	1.026
1995	0.672 **	0.863	0.610	0.625 *
1996	0.724	0.641	1.091	0.631
1997	0.717 *	0.876	0.828	0.611
1998	0.680 *	0.717	0.907	0.572 *
Duration at risk (years)	0.821 **	1.124	0.669 **	0.803 **
Duration at risk (years) squared	0.990 **	0.963 **	1.007	0.992
Age at marriage	1.331 **	1.352 **	1.096	1.417 **
Age at marriage squared	0.993 **	0.993 **	0.997	0.992 **
Residence before age 12				
Urban	0.878 **	0.944	0.896	0.869 *
(Rural)	1	1	1	1
Education				
(Secondary or less)	1	1	1	1
Secondary-special	1.090	0.912	1.043	1.197 **
Higher	1.002	1.016	0.958	1.058
Survey year 1995 vs. 1999	0.877 **	0.835 *	0.946	0.867 *
Number of cases	10673	2901	2103	5669

Notes: () reference category; significance level: *p≤.05, **p≤.01

Source: As for Table 1

Table 3. Transition from first to second birth (odds ratios)

Variable	All groups	Non-Russified Kazakhs	Russified Kazakhs	Europeans
Ethnocultural group				
Europeans	0.338 **			
Russified Kazakhs	0.604 **			
(non-Russified Kazakhs)	1			
Year				
1980	1.087	1.060	1.272	1.068
1981	1.110	1.421	0.865	1.039
1982	1.106	0.948	1.528	1.088
1983	1.124	0.725	1.560	1.195
1984	1.171	0.898	1.267	1.304
1985	1.213	1.017	1.187	1.357
1986	1.139	0.865	0.985	1.399 *
1987	1.080	0.854	1.098	1.201
1988	1.095	0.831	1.569	1.068
1989	1.088	0.935	1.405	1.104
1990	1.059	0.967	0.946	1.206
(1991)	1	1	1	1
1992	0.781 *	0.760	0.941	0.701
1993	0.790 *	0.653 *	1.051	0.740
1994	0.655 **	0.804	0.746	0.432 **
1995	0.454 **	0.337 **	0.746	0.383 **
1996	0.524 **	0.598 *	0.503 *	0.457 **
1997	0.536 **	0.396 **	0.697	0.545 *
1998	0.432 **	0.549 *	0.389 **	0.324 **
Duration at risk (years)	1.725 **	3.822 **	1.762 **	1.595 **
Duration at risk (years) squared	0.955 **	0.859 **	0.949 **	0.963 **
Age at first birth	1.181 **	1.355 **	1.365 *	1.038
Age at first birth squared	0.996 **	0.993 **	0.992 **	0.999
Residence before age 12				
Urban	0.746 **	0.893	0.771 **	0.705 **
(Rural)	1	1	1	1
Education				
(Secondary or less)	1	1	1	1
Secondary-special	0.868 **	0.909	0.681 **	0.861 *
Higher	0.674 **	0.754 **	0.551 **	0.654 **
First child alive				
Yes	0.386 **	0.518 **	0.251 **	0.894 *
(No)	1	1	1	1
Sex of first child				
Male	0.931 *	1.018	0.866	0.247 **
(Female)	1	1	1	1
Marital disruption				
Yes	0.468 **	0.309 **	0.445 **	0.571 **
(No)	1	1	1	1
Survey year 1995 vs. 1999	0.968	0.890	0.885	1.020
Number of cases	24640	4816	4318	15506

Notes: () reference category; significance level: *p≤.05, **p≤.01

Source: As for Table 1

Table 4. Transition from second to third birth (odds ratios)

Variable	All groups		Non-Russified Kazakhs		Russified Kazakhs	Europeans	
Ethnocultural group							
Europeans	0.175	**					
Russified Kazakhs	0.479	**					
(non-Russified Kazakhs)	1						
Year							
1980	1.628	**	1.588	**	1.624	1.824	*
1981	1.355		1.155		2.273	1.483	
1982	1.228		1.389		1.028	1.202	
1983	1.345		1.189		0.576	2.266	**
1984	1.762	**	1.366		2.088	2.392	**
1985	1.176		1.023		1.510	1.296	
1986	1.207		0.935		0.863	2.076	**
1987	1.481	**	1.243		1.406	2.146	**
1988	1.235		1.335		0.984	1.416	
1989	1.031		0.815		1.039	1.598	
1990	0.954		0.931		0.958	1.055	
(1991)	1		1		1	1	
1992	0.709	*	0.641	*	0.855	0.661	
1993	0.711	*	0.686		0.794	0.601	
1994	0.694	*	0.598	*	0.709	0.854	
1995	0.383	**	0.297	**	0.558	0.342	*
1996	0.761		0.720		0.460	1.251	
1997	0.499	**	0.446	**	0.587	0.268	*
1998	0.543	**	0.513	**	0.446	0.647	
Duration at risk (years)	1.643	**	2.124	**	1.594	1.348	**
Duration at risk (years) squared	0.959	**	0.934	**	0.963	0.974	**
Age at second birth	0.779	**	1.056		1.120	0.524	**
Age at second birth squared	1.004	*	0.998		0.996	1.013	**
Residence before age 12							
Urban	0.729	**	0.847		0.715	0.654	**
(Rural)	1		1		1	1	
Education							
(Secondary or less)	1		1		1	1	
Secondary-special	0.721	**	0.790	**	0.650	0.592	**
Higher	0.592	**	0.608	**	0.666	0.375	**
Children alive							
One or none	2.896	**	2.218	**	4.440	4.167	**
(Both)	1		1		1	1	
Number of boys							
None	1.238	**	1.188	*	1.296	1.241	*
(One or more)	1		1		1	1	
Marital disruption							
Yes	0.808	**	0.599	**	0.657	1.036	
(No)	1		1		1	1	
Survey year 1995 vs. 1999	0.863	**	0.882		0.670	1.022	
Number of cases	26437		5399		4752	16286	

Notes: () reference category; significance level: *p≤.05, **p≤.01

Source: As for Table 1

Figure 1. Predicted probabilities of first birth after marriage by ethnocultural group and year (three-year moving average) and trends in GNI PPP per head

Source: As for Table 1

Figure 2. Survival from first marriage to first birth by ethnocultural group and marriage cohort

Panel 1: All groups

Panel 2: non-Russified Kazakhs

Panel 3: Russified Kazakhs

Panel 4: Europeans

Source: As for Table 1

Figure 3. Predicted probabilities of second birth by ethnocultural group and year (three-year moving average) and trends in GNI PPP per head

Source: As for Table 1

Figure 4. Survival from first birth to second birth by ethnocultural group and first birth cohort

Panel 1: All groups

Panel 2: non-Russified Kazakhs

Panel 3: Russified Kazakhs

Panel 4: Europeans

Source: As for Table 1

Figure 5. Predicted probabilities of third birth by ethnocultural group and year (three-year moving average) and trends in GNI PPP per head

Source: As for Table 1

Figure 6. Survival from second to third birth by ethnocultural group and second birth cohort

Panel 1: All groups

Panel 2: non-Russified Kazakhs

Panel 3: Russified Kazakhs

Panel 4: Europeans

Source: As for Table 1