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Reproduction in Upheaval: Ethnicity, Fertility, and Societal Transformations in Kazakhstan[1]

Introduction

Demographers have often observed that long-term social and structural changes lead to demographic changes over time and across population segments. However, it is less clear 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 & Prata 2002; Festy 1984; Lindstrom & Berhanu 1999; NRC 1993; Palloni, Hill & Pinto 1996; Winter 1992). Anthropological literature shows that behavioral 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). Yet 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. This complexity 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, not all groups may be uniformly impacted by such upheavals or exhibit the same demographic responses.

In this paper we examine these complexities by analyzing how members of different ethnocultural groups in Kazakhstan, a vast yet sparsely populated country of some 15 million people, adapted their reproductive behavior to the radical and multidimensional societal transformations produced by the reforms in the Soviet Union and its subsequent collapse, Kazakhstan's independence, and its transition from a centrally-planned to a market economy. Along with its numerous positive consequences such as political and economic liberalization, the late-Soviet and early post-Soviet transition in Kazakhstan, as in most other former Soviet Republics, also increased socioeconomic inequalities and exacerbated insecurities of the majority of the country's population (Pomfret 1999; Olcott 2002). In addition to socioeconomic challenges in the years preceding and following its independence, Kazakhstan experienced considerable ethnic tensions, primarily between indigenous Kazakhs and descendents of European-origin settlers (to whom we will also refer as Europeans), and in recent years, a growing threat of Islamic fundamentalism.

These economic and ethnoreligious challenges and their implications for migratory patterns and trends are often addressed in the literature, but relatively little is known about how these challenges may have affected preferences and choices regarding childbearing. Yet reproduction is an important demographic mechanism through which individuals adjust to changes in their environments. Moreover, population segments with different background characteristics and divergent stakes in the ongoing societal transformations may engage these adjustment mechanisms differently. Specifically, the segments that may feel particularly disadvantaged by

[1] The support of the NICHD grant R03 HD044020 is gratefully acknowledged.

these transformations, such as European-origin groups in Kazakhstan, may be more likely to respond to them by altering their reproductive behavior than the rest of society.

The outcomes of these divergent adjustments are critical to society's viability and stability, especially in the case of such an ethnically and religiously divided country as Kazakhstan. However, to better capture and understand these adjustments also important to look at Kazakhstan's societal "crisis" 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 was increasingly taking hold. While 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

Our previous research has pointed to considerable and enduring ethnocultural differences in Central Asia in such matters as family formation, parity progression, and recourse to induced abortion (Agadjanian 1999; 2002; Agadjanian & Makarova 2003; Agadjanian & Qian 1997). Our conceptual model for this study builds upon these earlier findings by engaging four theoretical perspectives and corresponding bodies of knowledge. The first theoretical building block is adapted from the classical demographic transition theory, which assumes the universality of fertility decline, regardless of how this decline is shaped across time, place, and population segments. The second theoretical block is supplied by the literature on demographic responses to socioeconomic and political crises, which has often detected short-term demographic adjustments to dramatic changes in the environment as well as longer-term demographic repercussions of profound societal perturbations. The third block comes from the ethnic demography and minority group status literature, which generally argues that socially disadvantaged ethnic, religious or other minorities adjust their demographic behavior to maximize their security and/or social mobility. The final component of our conceptual edifice is taken from the literature on demographic trends in the Soviet Union and its successor states, which points to both considerable fertility changes in years preceding and following the collapse of the USSR and the continuities between these changes and the long-term trends of fertility transition in Soviet society.

Fusing these four theoretical and empirical blocks we propose the following general conceptual model. First, we expect that the population under study and its various segments should exhibit long-term demographic trends conforming to the general path of the later phases of demographic transition. Against this long-term background, however, we also expect to detect adjustments to both political and economic shocks of the late-Soviet and post-Soviet periods. These adjustments should take place both at the onset of childbearing and at its more advanced stages. While the onset-of-childbearing adjustments are to be minor, short-lived, and reversible, the adjustments in childbearing beyond the first birth are to be more profound, enduring, and in general congruence with the long-term secular trends. In Kazakhstan's reproductive setting—where the first birth remains a cultural imperative but the second birth often marks the end of childbearing career—the only meaningful comparison is between transition to first marital birth and transition to second birth, and our analyses will be focused on these two outcomes.

In addition, because different ethnic groups within Kazakhstan's population have different political stakes in the process of transition from Soviet to post-Soviet rule, 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 see the post-Soviet changes as politically beneficial—or at least may

not see any group-specific threats comparable to those sensed by Europeans, originating from those changes. Accordingly, Kazakhs' adjustments to late- and post-Soviet challenges 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 that ethnic group. Specifically, more Russified Kazakhs will exhibit a pattern of demographic reactions that is at least to some extent similar to that of Europeans, whereas less Russified Kazakhs will not. Finally, given the historical ethnic differences in the pace of fertility decline we expect the differences between Europeans and Kazakhs and within Kazakhs to be more pronounced in the transition to second birth than in the transition to first birth.

The historical fertility decline in Kazakhstan as well as ethnic differences in the pace of that decline has been shaped to a large extent by induced abortion. The centrality of abortion in the Soviet tradition of fertility regulation explains our specific interest in abortion trends. While the evidence pointing to a replacement of abortion with contraception in post-Soviet societies, including Kazakhstan, is ample (e.g., Agadjanian 2002; Westoff et al. 1998), abortion rates remain remarkably high in that part of the world. Importantly, in multiethnic settings such as Kazakhstan, recourse to abortion has varied greatly among ethnic groups, with abortion rates being historically higher among the Russian and other European-origin groups than among the autochthonous population (Agadjanian 2002). While we expect to corroborate the evidence of an overall decline in abortion in Kazakhstan in the periods leading to and following independence, we also anticipate that the mentioned societal shocks would have imprinted this overall trend with visible short-term stalling and even reversals. In line with our vision of ethnopolitical dynamics in Kazakhstan, we expect these fluctuations to be more pronounced among Europeans.

Data and methods

The study uses pooled data from the 1995 and 1999 Kazakhstan Demographic and Health Survey (KDHS-1 and KDHS-2) women's files for both descriptive explorations and multivariate analyses. As is standard in all DHS, the KDHS interviewed nationally representative samples of Kazakhstani women aged 15 to 49: 3771 in 1995 and 4800 in 1999. The DHS women's individual questionnaire used in both surveys allows for direct inter-survey comparisons and pooling of the survey data. 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 instills confidence in the quality of respondents' recall of timing of reproductive events. Despite their unprecedented scope and quality, 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 unraveled, and at least the beginning of the period of post-crisis sociopolitical and economic stabilization.

To examine trends in fertility and abortion 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, starting with a period of stability and predictability (up to the mid-1980s), moving on to the period of increasing political uncertainty and socioeconomic whirlpool that followed Gorbachev's ascension to power in 1985 and culminated in the breakup of the USSR in 1991, Kazakhstan's early independent years marked by abrupt economic decline, and ending with the period of gradual socioeconomic stabilization. Second, this approach 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 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 by the adoption of a new Constitution reiterating the preeminence of the Kazakh language and rejection of dual citizenship.[2] Importantly, as we stated earlier, we assume that these shocks were more traumatic for the non-titular population of Kazakhstan, especially the European-origin population, and we expect that the related fertility bumps, if noticeable, will be more pronounced among that demographic segment.

Statistical model

Our analysis focuses on marital fertility and excludes the tiny percentage of births that occurred prior to first marriage because such births in Kazakhstan, unlike in western societies, are rarely planned and therefore cannot be viewed as part of individuals' family strategies comparable to births within marriage. Our analysis also excludes birth to never married women, which are also relatively rare and, we assume, are driven by different motivations and constraints than 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. With respect to abortion, our analysis excludes abortions done prior to first marriage: such abortions, even if they are reported in the survey, are driven by very different constraints and considerations than marital abortions.

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 is still relatively uncommon (about 7% of KDHS-99 were divorced or separated at the time of the survey) and childbearing by divorcees is extremely rare. We therefore assume that all ever-married women who reported births after first marriage had those births within marriage. We also exclude the small number of ever-married women who did not report a pregnancy within the first five years of first marriage, considering them infecund (about 3% of all women).

To estimate the probabilities of birth and first abortion we use a discrete-time logit model. The dependent variable is the odds of having a birth (a first abortion) in a given year since marriage or previous birth. We estimate two separate models by birth order and a model for first abortion after marriage. Our main predictors are year and ethnicity. For year, we use 1991, the year of the breakup of the USSR, as the reference category. For ethnicity, instead of commonly used ethnic markers, such as Russians or Kazakhs, we opt for a more context-attuned set of indicators. First, we fuse all the European-background groups—Russians (majority), Ukrainians, Byelorussians, Germans, and other smaller groups originating in the European part of the former Soviet Union—into one category of "Europeans." The similarity of ethnic and religious roots and of demographic characteristics of different subgroups among Europeans outweighs 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 and non-natives in Kazakhstan has never been widespread, considerable cultural Russification of Kazakhs, most visibly manifested in language use, took place during the Soviet years. The Russian language remained widely used after independence, despite the

[2] Due to the period covered by our data, we will not be able to fully gauge any effects of Russia's financial meltdown 1998 that had profound repercussions in neighboring countries, including Kazakhstan.

government's efforts to reduce its role and promote Kazakh (Arenov & Kalmykov 1997; Fierman 1998).

We use the interview language—Kazakh or Russian—chosen by respondents (all KDHS respondents could choose between Kazakh and Russian) as the criterion for our classification: Kazakhs who chose to be interviewed in Russian (about 46% of all Kazakhs) will be considered more Russified, whereas Kazakhs selecting Kazakh as the language of interview will be considered less Russified or non-Russified. (Because virtually all Europeans were interviewed in Russian and are otherwise culturally homogeneous, no similar internal division within this group is drawn.) Such an approach, that proved relevant to sociodemographic differentials in Kazakhstan in our previous research (Agadjanian & Qian 1997; Agadjanian 1999; 2002), better captures *real* (as opposed to ascribed) ethnocultural differences within Kazakhstan's population with important implications for political and economic stakes of each of these groups.

Thus, Europeans can be seen as a group that became increasingly disadvantaged on all counts—culturally, politically, and economically—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, but 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, political, and economic claims.

The three groups' demographic experiences should therefore also affect the ways in which they adjust their marriage and fertility behavior to challenges and shocks of late-Soviet and post-Soviet changes. We use this variable as time-fixed, assuming that language-use preferences and corresponding cultural characteristics are established during childhood and adolescence. In the following text, we will use the term "ethnicity," "ethnic," and "ethnocultural" in reference to this variable. The small number of other and unidentified ethnic groups will be excluded from the analysis.

Religion, latently in the Soviet era and more overtly since the Perestroika years, has played an important part in ethnic identification. The KDHS had only one corresponding question ("What is your religion?"), and there is a very strong association between religious affiliation—mainly Islam or Orthodox Christianity—and ethnicity, especially for Kazakhs, 94 percent of whom declared themselves Muslim. In the absence of indicators measuring religiosity, religious affiliation is of little use and we do not include religion in our models.

In addition to different cultural traits and politico-economic stakes, these groups differ in their demographic backgrounds, especially in fertility and fertility regulation: fertility diminishes and reliance on abortion increases as one moves from the non-Russified Kazakh to the European end of the ethnocultural spectrum. Fertility differences between European-origin and native populations of Central Asia are usually interpreted in modernizationist terms: Europeans' lower fertility is seen as a product of a more advanced stage of the demographic transition. Our three-level classification, while replacing the more traditional dichotomy, Russians and other Europeans vs. natives, fits with it quite well. Indeed, the total fertility rates, computed for each of the three groups from the 1999 KDHS, rank these groups in a predictable order: 3.1 children per woman for non-Russified Kazakhs, 1.9 for Russified Kazakhs, and 1.4 for Europeans. Notably, all three groups experienced a decline in total fertility: the corresponding TFRs computed from the 1995 KDHS data are 3.6, 2.3, and 1.8. While both the differences and the trends in ethnic-specific TFR tell a useful story, that story is much less informative for our purposes than a story that the dynamic multivariate models proposed for our study will tell.

The statistical models for first birth control for age at marriage (linear and quadratic), duration since marriage, contraceptive use since marriage (used or not), and education (secondary or less, secondary special, or 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 socio-cultural environment in which they were growing up. The second-birth model also controls for the sex of first child and for whether the first child was alive or dead in the beginning of each year of exposure. The first-abortion model controls for the same factors except contraceptive use because in the DHS data it is impossible to ascertain whether contraceptive use took place before or after an abortion. The first-abortion model also controls for the number of living children in a given year.

Our analysis of temporal trends covers the period between 1972 and 1998: earlier years are excluded because the small number of observations makes the patterns less reliable, while 1999, the year of KDHS-2, is excluded because of shorter duration of exposure than in other years. The main focus of our analysis, however, is the late 1980s and 1990s, i.e., the years of the decline and collapse of the Soviet Union and the early post-Soviet period. To make a more convincing argument about the influence of societal factors on the outcomes of interest we juxtapose trends in the outcomes with post-independence trends in economic development, approximated by trends in Kazakhstan's Gross National Income in Purchasing Power Parity (GNI PPP) and in its social climate, approximated by trends in the country's net migration rate (no comparable and trustworthy data for the Soviet period are available).

Results

Probability of first birth after marriage

We start with the analysis of transition to first birth after marriage. As can be recalled, we expected the probability (timing) of first marital birth to vary relatively little by ethnocultural group. Table 1, presenting the odds ratios for four models—one for the overall pooled sample and one for each ethnocultural group—generally confirms that expectation. The overall model shows no ethnic differences in the probability of first birth. Variations by other measures included in the models are also small. Thus education has no effect. Having grown up in an urban setting leads to an earlier first birth probably because of a higher share of premarital conceptions among women of urban backgrounds (many, if not most, of whom were still living in urban areas at the time of their first marriages). Age at marriage displays a curvilinear effect: the odds of first birth first increase and then decline as age at marriage rises. These results are consistent throughout the ethnic-specific models.

Table 1 about here

We also 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-lived. The year effects presented in Table 1 point to lower probabilities of first birth in the 1970s but no impact of the period surrounding Kazakhstan's 1991 independence, ostensibly the most radical political metamorphosis in Kazakhstan's recent history. In fact, only 1995, 1997, and 1998 stand out as having a significant negative effect on the probability of first birth, relative to the independence year. 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. If the 1995 dip in first-birth probabilities was indeed related to those political developments, it is understandable why it manifested itself most strongly among Europeans (see the Europeans-only model).

Notably, however, the corresponding coefficient in the Russified Kazakhs model is very similar in magnitude, and even non-Russified Kazakhs displayed a significant drop in first-birth probability in that year (even if less pronounced than among the other two groups), again supporting our expectations that ethnocultural differences would be modest. Although these ethnic patterns seem to fit with the expected psychological impact of the 1994-5 political events, one can also view them as a short acceleration of a longer-term trend leading to what appeared to be a more sustained decline in probabilities of first births toward the end of the period under observation. Interestingly—and defying our expectation—the shape of the tail of this longer-term trend differed markedly between Europeans and Russified Kazakhs: while among the former the probability of first birth dipped in 1997-8 to the level of 1995, among the latter, the probability decrease in those years was smaller and not statistically significant relative to the reference year.

For an easier grasp and interpretation of longer-term temporal trends we present the yearly odds ratios from the above models graphically in Figure 1 smoothened as three-year moving averages.[3] The first graph of Figure 1 also depicts the trend in Kazakhstan's net migration in the 1990s. The second graph of Figure 1 replicates the temporal trends in birth probabilities of the first graph but replaces the trends in net migration with trends in Kazakhstan's GNI PPP. We should stress that these graphs must be interpreted in conjunction with the significance levels of corresponding parameters estimates from the models presented in Table 1.

Figure 1 about here

The trend for the overall sample suggests an increase in the probability of first birth since the early 1970s and its stabilization throughout most of the 1980s. The downward trend in all three groups started in the early 1990s and accelerated by the middle of the decade. The probability of first birth stabilized in the remaining period among the two Kazakh groups but continued to drop among Europeans (until possibly leveling off toward the very end of the observation span) , i.e., the group that we expected to be most sensitive to challenges of the early independent era. Notably, the initial decline and subsequent stabilizations in predicted probabilities of first birth among the Kazakhs followed rather closely trends in economic and social stability (approximated by GNI PPP and net migration, respectively). In contrast, the economic and social stabilization notwithstanding, the probability of first marital birth among Europeans continued to slide.

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 for four first-marriage cohorts—1972-80, 1981-85, 1986-90, and 1991-98. The youngest marriage cohort shows longer survival to first birth than the preceding three cohorts, among which hardly any differences are noticeable. However, the breakdown by ethnicity also indicates that the peculiarity of the youngest cohort was due to a considerable decline in the probability of first birth among Europeans. Indeed, one out of six European women married between 1986 and 1990 was to remain childless seven years after her first marriage. In comparison, neither Kazakh ethnocultural group displays any appreciable cross-cohort variation.

Figure 2 about here

Probability of second birth

[3] Moving averages were calculated by averaging the estimated for each year with estimates for two preceding years. Hence no moving averages for year 1972 and 1973 are presented.

Table 2 presents the odds ratios of second birth from four models—one for the whole sample and one for each ethnocultural group. The overall, time-independent ethnocultural differences in the probability of second birth were much more noticeable than in the first-birth model. Reflecting the long-term pattern of the fertility transition, these differences followed the expected pattern: the higher degree of "Europeanness" was associated with a lower probability of second birth. 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 last two factors impacted the transition to second birth mainly among Europeans. For Russified Kazakhs, only higher education made a clear difference, whereas for non-Russified Kazakhs neither education nor childhood background seemed to matter.

Table 2 about here

Unlike the case of first birth, a precipitous decline in the probability of second birth started immediately after 1991, the year of the Soviet Union's demise and Kazakhstan's independence. As the overall model shows, the probability of second birth was significantly lower in each year following Independence than in 1991. In contrast, the previous years showed no significant differences from the reference year. The only exception is Europeans, among whom the probability of second birth declined significantly between 1990 and 1991, likely reflecting the growing uncertainties of the last Soviet year. Once again, 1995 stands out overall in the magnitude of the drop in second-birth probability—the magnitude that was matched only in the last year under observation. The 1995 drop was particularly pronounced among Europeans, but even among that group the last year under examination witnessed a renewed—and dramatic—slide. Toward the end of the observation period the probability of second birth also slid below the 1995 level among Russified Kazakhs, but among non-Russified Kazakhs the probability of second birth stabilized and even rose slightly by 1998, though remaining significantly below that in the reference year.

The smoothened longer-span temporal trend, graphically depicted in Figure 3, points to a continuing, even if moderate, rise of the probability of second birth through the late 1980s, the heyday of Gorbachev's Perestroika, which, if real, may be a delayed repercussion of the pronatalist reforms of the first half of that decade. As we expected, compared to the trends in the probability of first birth, the post-Independence decline in the probability of second birth was both more precipitous and consistent among all three groups, even if with a modest slowdown toward the very end of the observation span. Europeans, also in line with our expectations, proved more sensitive to post-Independence insecurities displaying the largest and fastest post-drop in probability of second birth in throughout the 1990s. Unlike the rather convincing signs of stabilization observed earlier in the probability of first birth among both Kazakh groups toward the end of the observation period, when the economic growth started to pick up and out-migration started to diminish, only non-Russified Kazakhs displayed tentative indications of such a stabilization in the probability of second birth. From the mid-1990s the three groups aligned themselves in a straightforward pattern, compatible with the expected ethnocultural differences in the impact of the post-Soviet changes. Notably, by the end of the observation span, the probability of second birth among in each ethnocultural group stood at its lowest historical level.

Figure 3 about here

Figure 4 presents trends in probabilities of transition to second birth for four first-birth cohorts regardless of ethnicity and for each of the three ethnocultural groups. Unlike the case of first birth, in the transition to second birth all four cohorts display a similar pattern of ethnocultural differences: the delay in having a second birth is longest among Europeans and shortest among

non-Russified Kazakhs. However, whereas in the two oldest cohorts almost all women in all the three ethnocultural groups eventually end up with a second birth, the second youngest and especially the youngest cohort exhibit a growing ethnocultural divergence in the outcome of the transition to second birth. Thus whereas just about one in ten non-Russified Kazakhs who had their first birth between 1991 and 1998 would not have a second birth seven years later, almost sixty percent of their European peers would still have one child at that point. Again, in terms of both trajectory and outcome Russified Kazakhs are positioned between the other two groups.

Figure 4 about here

Probability of first abortion after marriage

Table 3 presents the results of the models predicting the probability of a first termination of pregnancy. The all-group model illustrates dramatic period-independent differences in recourse to abortion among the three ethnocultural groups. The differences follow a familiar pattern: as one moves from the Kazakh to the European end of the trichotomy, the likelihood of resorting to abortion rises considerably. Remarkably, recourse to abortion is not conditioned by either education or childhood background. Also interestingly, among Europeans, recourse to abortion shows no connection to the number of living children, while among both Russified and non-Russified Kazakhs the probability of having a first abortion increases with parity. In contrast, however, only for Europeans does age matter (controlling for the number of children): the first abortion probability rises with age but with a decelerating rate. It is important to remind here that for most of the Soviet period the ethnocultural differences in recourse to abortion did not reflect any differences in contraceptive use but rather differences in intended fertility.

Table 3 about here

Table 3 also shows that the decline in recourse to abortion was continuous and generalized. No changes in the societal milieu that may have been shaping short-term oscillations in probabilities of births demonstrated any effect on abortion. As a result, Europeans and Russified Kazakhs arrived in 1998 with by far the lowest probabilities of having a first abortion in the observable past, but even among non-Russified Kazakhs the probability of having a first abortion in most of the post-independence years was much lower than before or even at independence.

Figure 5 depicts smoothened ethnic-specific probabilities of first abortion. The graph further illustrates the continuous decline in probabilities of abortion among all three groups. Among Europeans the decline started in the late1970s-early 1980s and became particularly precipitous since the mid-1980s, the same period that an irreversible decline started among Russified Kazakhs. The decline continued into the following decade at similar paces in all three ethnocultural groups. Neither the crises of the early and mid-1990s nor the subsequent economic and social stabilization found any reflection in the abortion probability trends. (An apparent stabilization of abortion probabilities among non-Russified Kazakhs since the mid-1990s is in fact counterintuitive and is more likely due to the already low incidence of abortion among that group than to some environmental influences.)

Figure 5 about here

The relentless decline in abortion in Kazakhstan is rightly credited to the vigorous expansion of effective contraception since the second half of the 1980s (Agadjanian 2002; Westoff et al. 1998), although our field observations suggest that the rising pecuniary (official or not) costs of abortion may also have played a role. The marriage cohort-specific graphs presented in Figure

6 show that most changes took place in the two youngest cohorts. Interestingly, among Europeans the largest decline in the probability of first abortion occurred between the second-youngest and youngest cohorts, whereas among both Kazakh groups major shifts began a cohort earlier.

The two last marriage cohorts displayed the already familiar three-level pattern of ethnocultural differences both in the tempo and the outcome of survival to first abortion: thus among women who married in the 1990s, sixty percent of Europeans, forty-five percent of Russified Kazakhs, and "only" a quarter of non-Russified Kazakhs would be expected to have a first abortion within the first seven years of marriage. It is important to realize, that our analysis deals only with first abortions; repeat abortions remain common in Kazakhstan to this date and their ethnocultural peculiarities require a separate investigation.

Figure 6 about here

Summary and conclusion

In an attempt to establish ethnic-specific responses to dramatic societal changes in Kazakhstan triggered by the decline and collapse of the Soviet Union, we considered three reproductive outcomes. Our first outcome, progression to first birth after marriage, was hypothesized to display short-term sensitivity to shocks while no comparable sensitivity in a longer run. We did not see any effects associated with what would appear as the most dramatic change during the period under observation—the disintegration of the USSR and the proclamation of Kazakhstan's independence. The drop in the probability of first birth became noticeable only in the middle of the decade, which may have been associated with the political instability of 1994-5. Toward the end of the period under observation the probability of first birth seemed to stabilize paralleling a stabilization of the economic and political situation in the country, which in general supports our expectation that delays in timing of first births are easily reversible. Also as our theoretical framework projected, Europeans displayed the most dramatic decline and the least pronounced recovery of predicted period probabilities of first births in the post-Soviet years. A dissection of probability trends by ethnicity and cohort further confirmed that changes were strongest among Europeans. In sum, the reactions of probabilities of first birth to societal perturbations were indeed relatively small and short-lived among Kazakhs but were somewhat more pronounced and prolonged among Europeans.

Whereas we construed transition to first birth within marriage mainly as a matter of *timing*, transition to second birth in a low-fertility setting like Kazakhstan is increasingly about *completing* childbearing. Not surprisingly, period-independent ethnocultural differences in the probability of second birth were much more noticeable than in the probability of the first birth and followed an expected pattern—a greater degree of Europeanness was associated with a lower probability of second birth. Transition to second birth, also as we expected, proved more sensitive to the tumult accompanying the Soviet meltdown. The probability of the second birth went tumbling down after the turn of the last decade of the century. Again, the crash was most manifest among Europeans, but even among the two Kazakh groups the probabilities of second birth dropped to their historical lowest levels. Unlike the case of first birth, which showed little cross-cohort variations, the youngest cohort in all three groups was markedly different from their respective predecessors. The beginning of economic and social stabilization did not seem to do much to resuscitate fertility, except probably among non-Russified Kazakhs, who arguably were both least affected psychologically by the transition and perhaps least culturally predisposed for low fertility.

Finally, we viewed induced abortion, a birth control technology responsible for much, if not most, of the fertility decline in the Soviet era, as a possible means of coping with short-term societal shocks. However, no anticipated connection between first recourse to abortion and the changing environment could be found: while the socioeconomic and political challenges spurred by *Perestroika* and Kazakhstan's independence greatly dampened reproductive aspirations, the rapidly increasing access to contraception and rising pecuniary costs of abortion made the latter a less attractive option for fertility regulation even in the most challenging moments of the societal crisis. Not surprisingly the most dramatic decline of abortion probabilities occurred among Europeans, who historically had had by far the highest levels of abortion in Kazakhstan. The decline in abortion, however, also occurred in the two Kazakh groups thus preserving the already familiar pattern of ethnocultural differences. The reduction in abortion, fully compensated for by the rise in contraceptive use, did not seem to have any effect on fertility decline, especially at higher parities, although establishing a more precise connection between fertility and abortion trends would require a special investigation. It is important to note, however, that even after a decade-long sustained decline in induced abortion, at the turn of the 21st century it remained a major method of birth control in Kazakhstan and a marker of ethnocultural differences in reproductive choices.

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 social changes in Kazakhstan. Because KDHS-2 was conducted in 1999, before the socioeconomic turnaround in Kazakhstan started in earnest, we are not able to examine whether the stabilization and growth has produced any appreciable upturn in fertility, including any ethnocultural differences in that process. Yet our study did produce informative and interesting results. Our approach and findings illustrate the importance of embedding reproductive dynamics within country-specific political, economic, and ethnocultural landscapes. They also demonstrate the need to contextualize short-term variations in fertility behavior within longer-term, secular reproductive trends. Finally, they call for an examination of different aspects of reproductive behavior as these different aspects are adjusted in different ways and to different degrees in the face of societal challenges.

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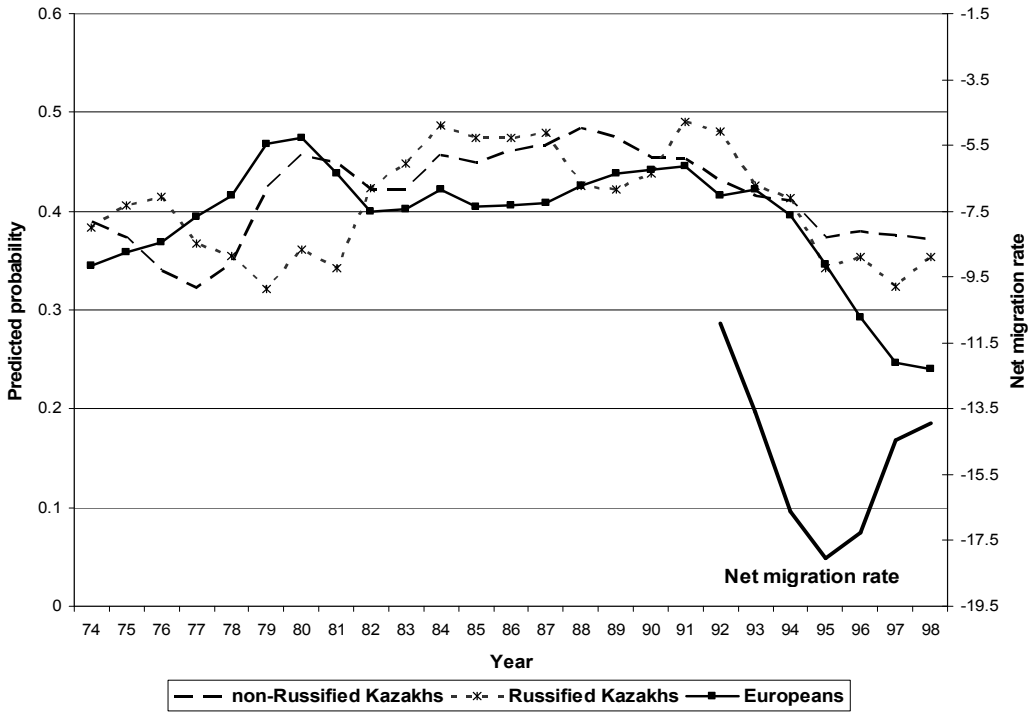
Table 1. Transition to first birth after marriage (odds ratios)

	Model 1 All groups	Model 2 non-Russified Kazakhs	Model 3 Russified Kazakhs	Model 4 Europeans
Ethnocultural group				
Europeans	0.912			
Russified Kazakhs	1.034			
(non-Russified Kazakhs)	1	1	1	1
Year				
1972	0.751	0.734	0.746	0.748
1973	0.697*	0.746	0.579	0.707
1974	0.714+	0.889	0.905	0.605*
1975	0.813	0.591+	0.980	0.900
1976	0.689*	0.470*	0.651	0.804
1977	0.752+	0.708	0.485+	0.843
1978	0.999	0.825	0.840	1.168
1979	1.173	1.253	0.405*	1.519+
1980	0.926	1.062	0.826	0.918
1981	0.732+	0.751	0.660	0.737
1982	0.989	0.902	1.176	0.963
1983	1.000	1.067	1.112	0.940
1984	1.043	1.153	1.071	0.956
1985	0.825	0.816	1.019	0.776
1986	1.052	1.254	1.112	0.946
1987	1.078	1.223	1.128	0.988
1988	0.832	1.011	0.513*	0.957
1989	1.064	1.099	1.069	1.115
1990	1.053	0.969	1.365	1.036
(1991)	1	1	1	1
1992	0.832	0.832	0.951	0.761
1993	0.909	0.802	0.701	1.120
1994	0.829	0.947	0.856	0.718
1995	0.402**	0.506*	0.360**	0.369**
1996	0.689*	0.865	0.813	0.565+
1997	0.535**	0.906	0.579	0.364**
1998	0.407**	0.473*	0.563	0.325**
Duration at risk (years)				
(0)	1	1	1	1
1	19.629**	23.819**	22.254**	16.995**
2	14.805**	20.450**	12.386**	13.928**
3	7.891**	11.814**	6.200**	7.263**
4	7.239**	9.353**	6.257**	7.246**
5	20.457**	>999.0	4.600**	27.114**
Age at marriage	1.327**	1.359**	1.220	1.313**
Age at marriage squared	0.993**	0.993**	0.99*	0.994**
Education				
(Secondary or less)	1	1	1	1
Secondary-special	0.961	0.925	0.821	1.010
Higher	0.966	1.166	0.904	0.915
Prior contraceptive use				
Had not used	2.635**	2.490**	2.233**	2.520**
(Has used)	1	1	1	1
Residence before age 12				
Urban	1.117*	1.216	1.136	1.079
(Rural)	1	1	1	1

Note: significance level ** p<.01, *p<.05, + p<.10; ( ) - reference category

Figure 1: Predicted probabilities of first birth after marriage by ethnocultural group and year (moving average)

Panel 1: Net migration rate added



Panel 2: GNI PPP added

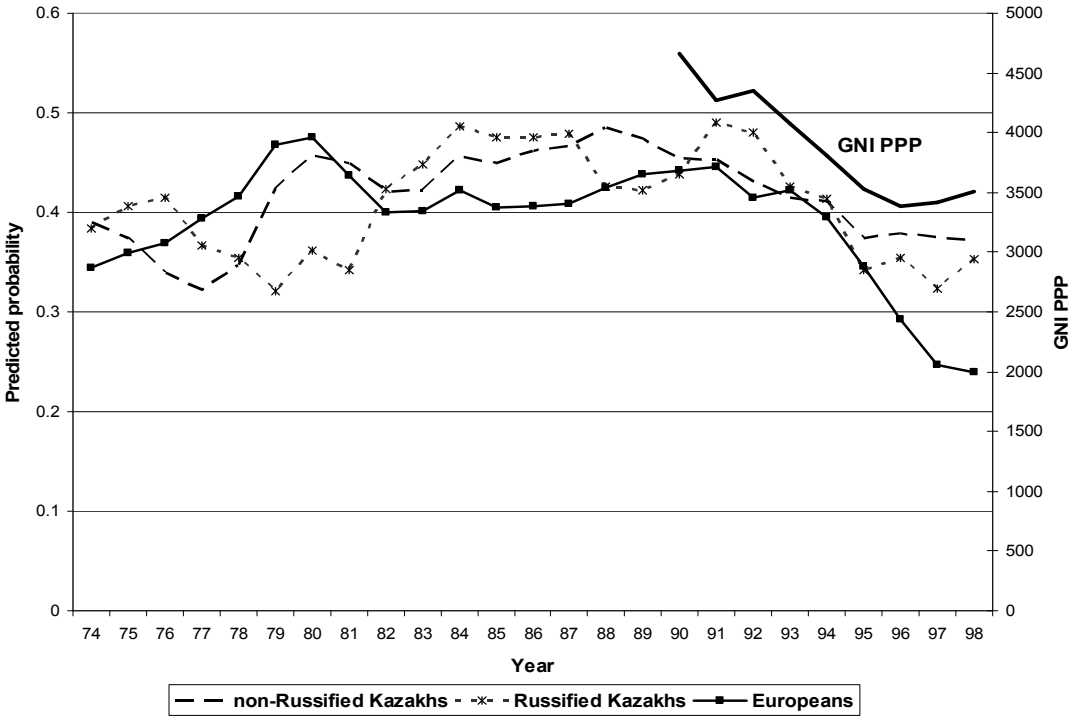


Figure 2. Survival function from marriage to first birth by year-of-marriage cohort and ethnicity

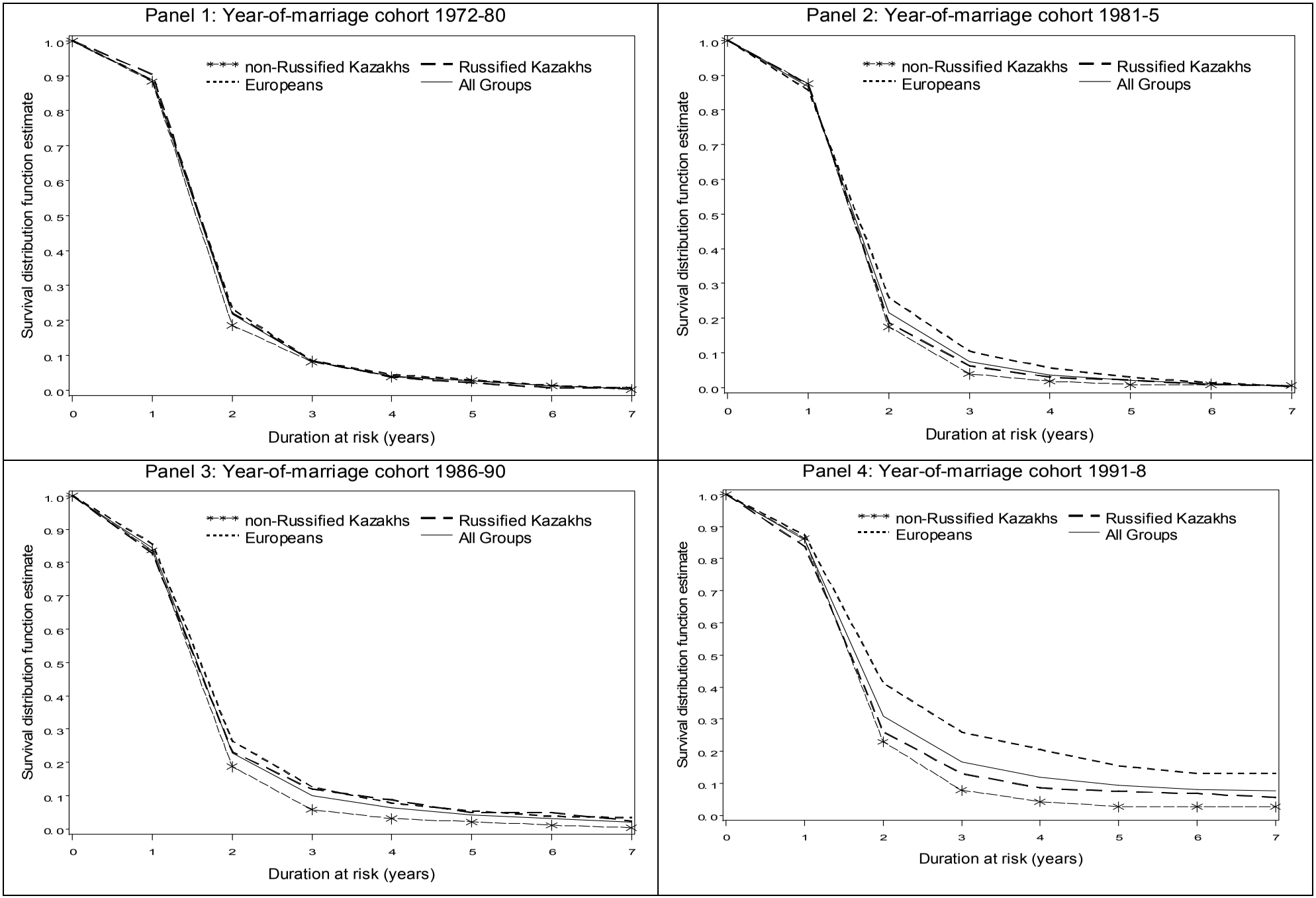


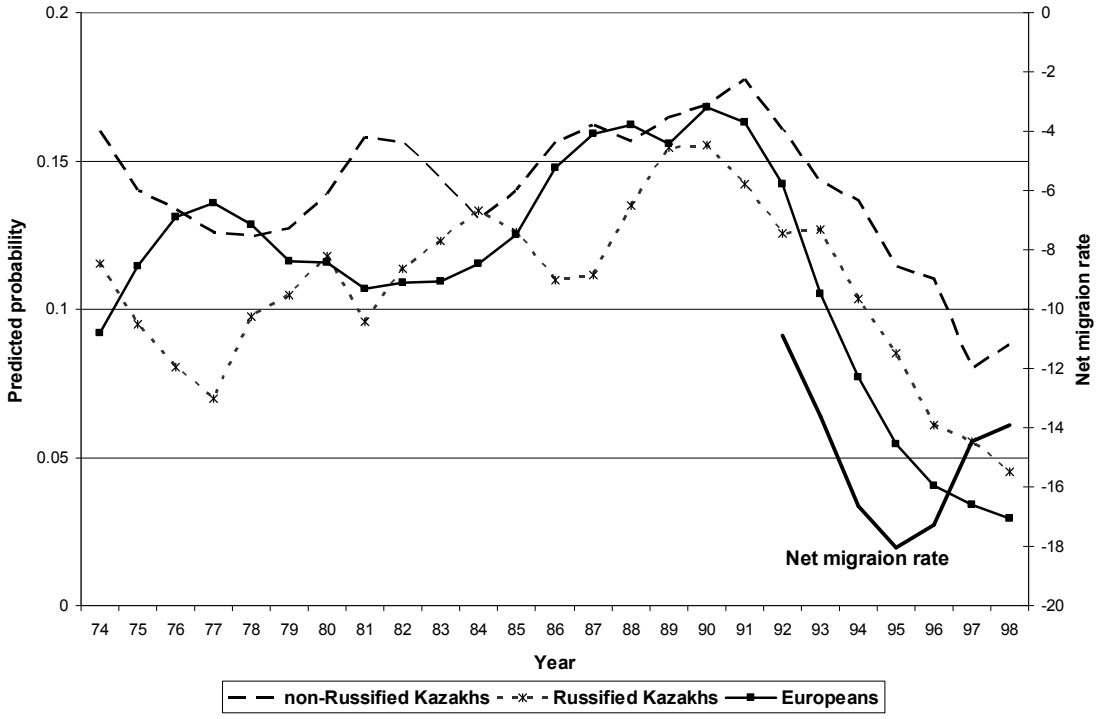
Table 2. Transition to second birth (odds ratios)

	Model 1 All groups	Model 2 non-Russified Kazakhs	Model 3 Russified Kazakhs	Model 4 Europeans
Ethnocultural group				
Europeans	0.538**			
Russified Kazakhs	0.827**			
(non-Russified Kazakhs)	1	1	1	1
Year				
1972	0.735	1.068	0.779	0.618
1973	0.706+	0.855	0.713	0.660
1974	0.66*	0.723	0.729	0.643+
1975	0.852	0.674	0.358*	1.177
1976	0.820	0.737	0.416*	1.064
1977	0.655**	0.583+	0.509+	0.755
1978	0.854	0.652	0.941	0.989
1979	0.708*	0.790	0.555	0.762
1980	0.730*	0.788	0.790	0.739
1981	0.767+	1.024	0.466*	0.766
1982	0.830	0.757	0.944	0.813
1983	0.772+	0.562*	1.004	0.751
1984	0.826	0.756	0.681	0.915
1985	0.949	0.947	0.776	1.057
1986	0.981	0.861	0.641	1.328
1987	0.947	0.868	0.722	1.214
1988	1.046	0.837	1.328	1.135
1989	1.081	1.027	1.087	1.155
1990	1.094	0.956	0.742	1.569*
(1991)	1	1	1	1
1992	0.692**	0.694+	0.709	0.635+
1993	0.659**	0.628*	0.769	0.607*
1994	0.553**	0.871	0.496**	0.346**
1995	0.250**	0.321**	0.331**	0.155**
1996	0.367**	0.552*	0.283**	0.301**
1997	0.306**	0.335**	0.383**	0.219**
1998	0.174**	0.456**	0.142**	0.060**
Duration at risk (years)				
(0)	1	1	1	1
1	27.518**	45.489**	41.930**	11.681**
2	88.620**	180.232	152.477**	29.101**
3	89.978**	182.984**	129.415**	35.386**
4	122.407**	125.126**	158.712**	61.668**
5	147.84**	171.798**	147.639**	76.715**
6	207.158**	150.839**	208.939**	116.519**
7	976.207**	568.739**	>999.999**	695.964**
Age at first birth	1.143*	1.404**	1.064	0.949
Age at first birth squared	0.997*	0.993**	0.998	1.001
Education				
(Secondary or less)	1	1	1	1
Secondary-special	0.856**	0.875	0.794*	0.840*
Higher	0.809**	0.894	0.767+	0.799*
Prior contraceptive use				
Had not used	3.099**	3.928**	2.968**	2.764**
(Has used)	1	1	1	1
Residence before age 12				
Urban	0.798**	0.926	0.849	0.729**
(Rural)	1	1	1	1
First child alive				
Yes	0.222**	0.333**	0.145**	0.148**
(No)	1	1	1	1
Sex of first child				
Male	0.920*	1.003	0.838+	0.729*
(Female)	1	1	1	1

Note: significance level ** p<.01, *p<.05, + p<.10; ( ) - reference category

Figure 3: Predicted probabilities of second birth by ethnocultural group and year (moving average)

Panel 1: Net migration rate added



Panel 2: GNI PPP added

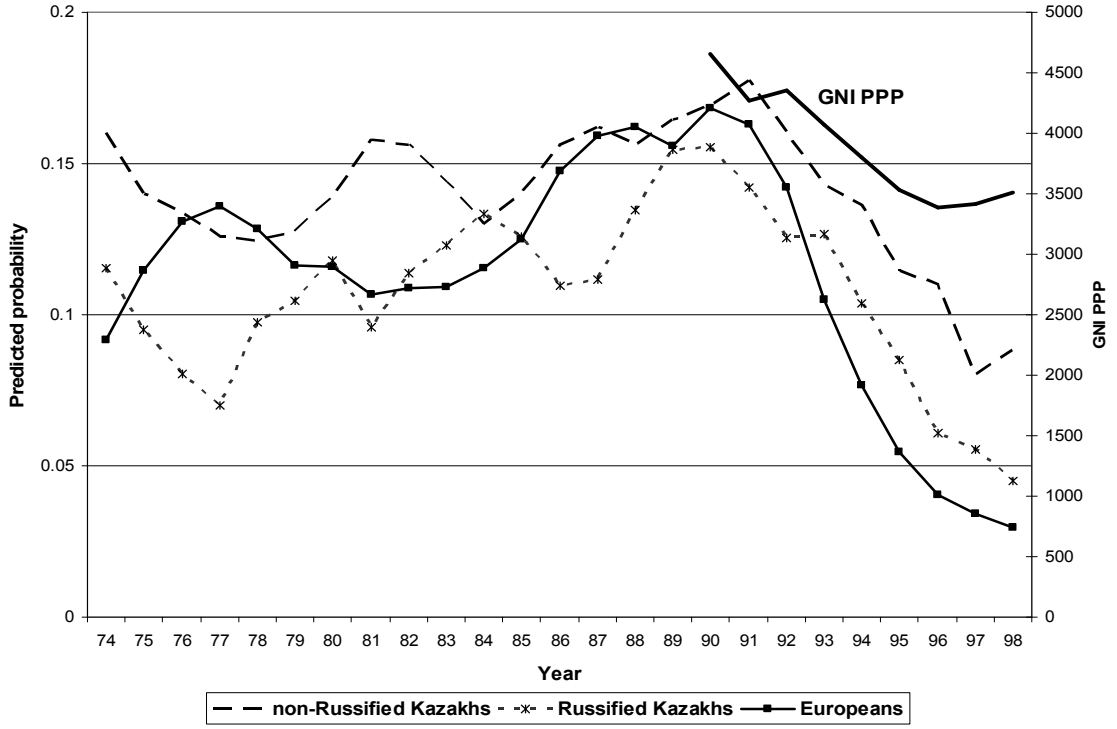


Figure 4. Survival function from first to second birth by year-of-first-birth cohort and ethnicity

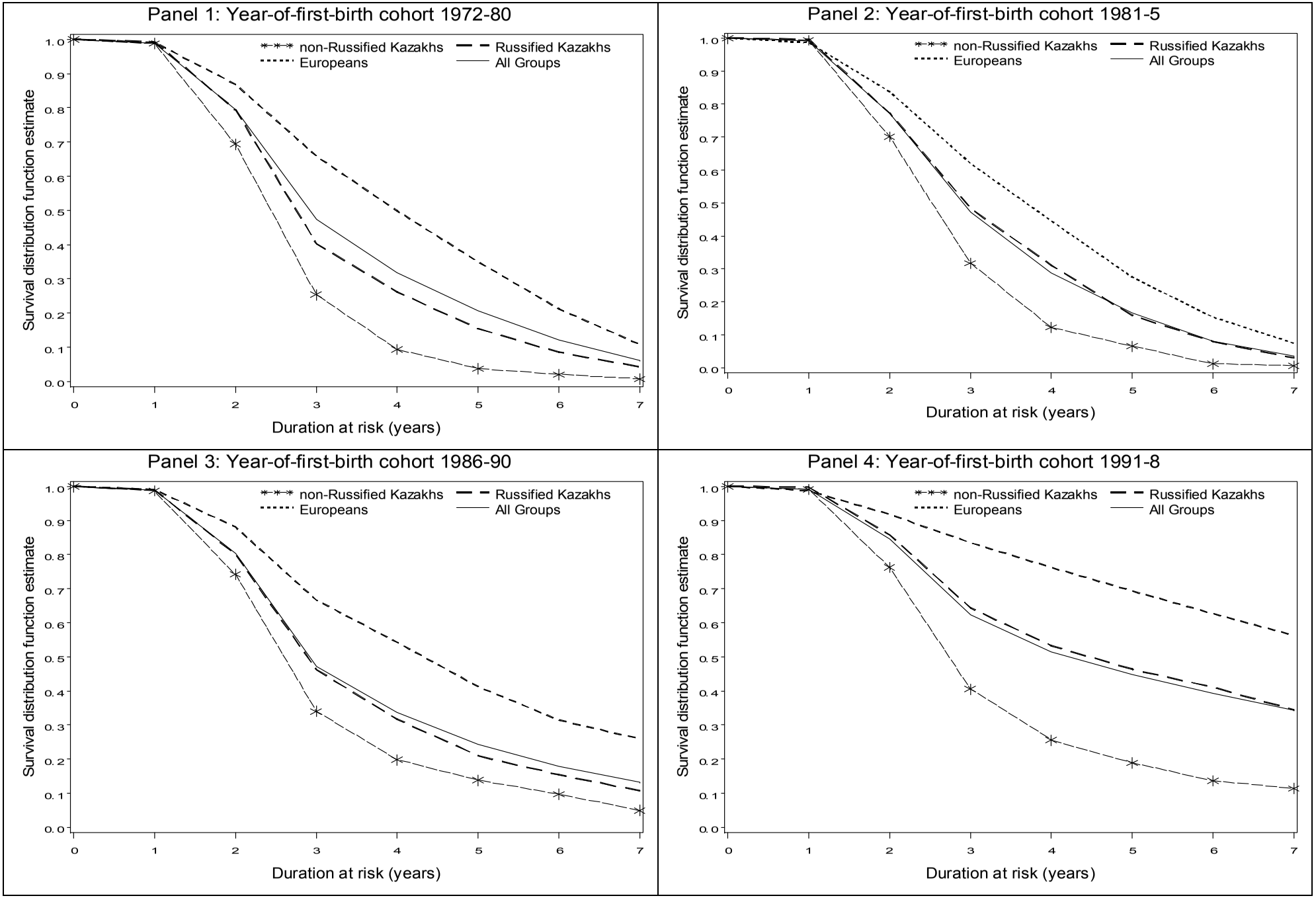


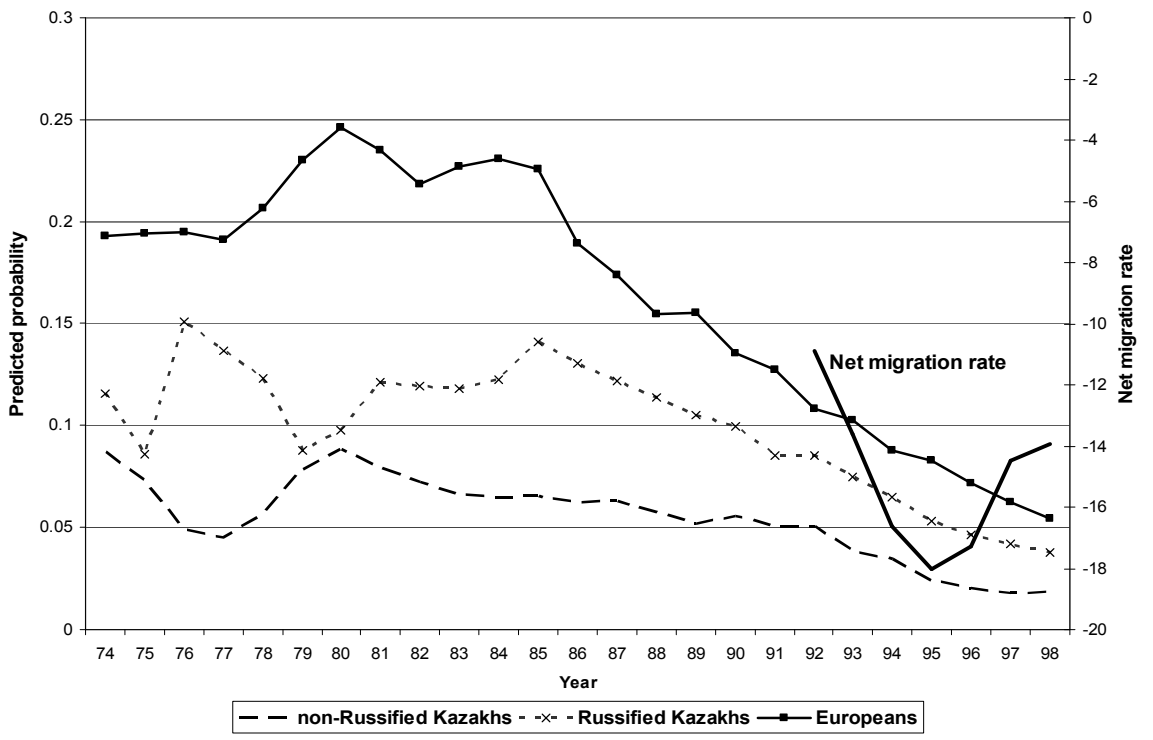
Table 3. Transition to first abortion after marriage (odds ratios)

	Model 1 All groups	Model 2 non-Russified Kazakhs	Model 3 Russified Kazakhs	Model 4 Europeans
Ethnocultural group				
Europeans	2.677**			
Russified Kazakhs	1.787**			
(non-Russified Kazakhs)	1	1	1	1
Year				
1972	1.901**	2.609	2.468+	1.678*
1973	1.618**	2.636	0.123	1.741**
1974	1.749**	2.054	1.974+	1.610*
1975	1.648**	1.349	1.147	1.712**
1976	1.869**	0.554	2.844**	1.776**
1977	1.527**	1.747	1.355	1.481*
1978	2.029**	2.371*	0.610	2.248**
1979	2.402**	2.427*	1.241	2.627**
1980	2.093**	2.624**	1.772+	2.007**
1981	1.778**	1.562	1.529	1.852**
1982	1.840**	1.803	1.168	2.026**
1983	2.178**	2.085*	1.737+	2.300**
1984	1.871**	1.409	1.695+	1.994**
1985	1.929**	1.870+	1.975*	1.841**
1986	1.314+	1.797+	1.286	1.117
1987	1.496**	1.460	1.338	1.500*
1988	1.382*	1.410	1.594+	1.229
1989	1.151	1.327	0.944	1.140
1990	1.147	1.754*	1.130	0.929
(1991)	1	1	1	1
1992	0.855	1.356	0.941	0.627*
1993	0.759*	0.696	0.724	0.780
1994	0.651**	0.711	0.620	0.622*
1995	0.510**	0.489*	0.516*	0.496**
1996	0.480**	0.407*	0.465*	0.503**
1997	0.447**	0.492+	0.473*	0.399**
1998	0.380**	0.566	0.350**	0.307**
Duration at risk (years)	1.199**	1.224**	1.218**	1.190**
Age	1.316**	1.211	1.304*	1.478**
Age squared	0.994**	0.996+	0.995*	0.992**
Education				
(Secondary or less)	1	1	1	1
Secondary-special	1.185**	1.421**	1.223+	1.075
Higher	1.159*	1.764**	1.169	0.953
Residence before age 12				
Urban	1.145**	1.466**	1.415**	0.994
(Rural)	1	1	1	1
Prior live births	1.186**	1.385**	1.407**	0.956

Note: significance level ** p<.01, *p<.05, + p<.10; ( ) - reference category

Figure 5: Predicted probabilities of first abortion after marriage by ethnocultural group and year (moving average)

Panel 1: Net migration rate added



Panel 2: GNI PPP added

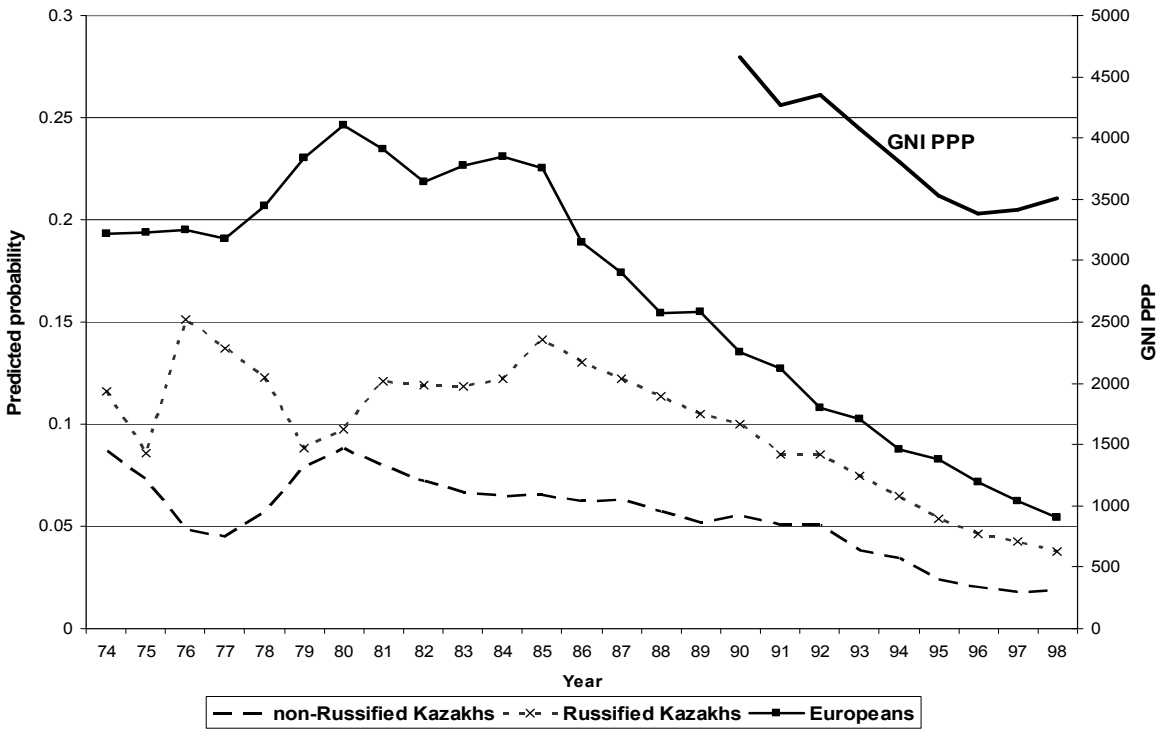


Figure 6. Survival function from marriage to first abortion by year-of-marriage cohort and ethnicity