



Demographic Research a free, expedited, online journal
of peer-reviewed research and commentary
in the population sciences published by the
Max Planck Institute for Demographic Research
Konrad-Zuse Str. 1, D-18057 Rostock · GERMANY
www.demographic-research.org

DEMOGRAPHIC RESEARCH

VOLUME 15, ARTICLE 15, PAGES 435-460
PUBLISHED 24 NOVEMBER 2006

<http://www.demographic-research.org/Volumes/Vol15/15/>

DOI: 10.4054/DemRes.2006.15.15

Research Article

Completing the fertility transition: Third birth developments by language groups in Turkey

Sutay Yavuz

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Completing the fertility transition: Third birth developments by language groups in Turkey

Sutay Yavuz¹

Abstract

The purpose of the present study is to examine third birth dynamics by mother tongue group in Turkey, a country that has reached the advanced stage of its fertility transition. Third-birth intensities of Turkish speaking mothers are lower than Kurdish speaking mothers and the decline in fertility started much later for the latter group. Kurdish speaking women who cannot read and who live in more customary marriages have the highest third birth risk. We demonstrate that to understand contemporary fertility change in Turkey, it is necessary to consider a combination of individual socio-economic and cultural factors.

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1. Introduction

The present study is about recent fertility change in Turkey, a country which is now about to reach the final stage of its fertility transition. It aims at disentangling the role of different factors that may be related to social change of that kind. The term fertility transition, as used in the demography literature, denotes a change in reproductive behavior within which “natural” fertility shifts to modern family limitation (Van de Walle 1992). The natural fertility concept, introduced by Henry (1961), refers to reproductive behavior characterized by absence of deliberate birth control. Modern family limitation, on the other hand, arises from the modification of reproductive behavior so that fertility turns into a matter of calculus choice (Coale 1973). While hitherto fertility was not affected by previous number of children, parity-specific birth limitation increasingly becomes important during the course of fertility transition. Birth order becomes a third fertility dimension, next to age of mother and time since previous birth (Lutz 1989).

The progression from second to third birth is a critical step in the fertility transition, since the reduction especially of third and higher-order births maintains the fertility decrease (Van de Kaa 1987, Feeney and Feng 1993, Schoen and Canudas-Romo 2006, Morgan and Taylor 2006). The pivotal role of third births in maintaining replacement level fertility in developed countries and marking the existence of a two-child norm has also been underlined (Corman 2000, Hoem et al. 2001).

As Turkey is about to complete its fertility transition we focus on the progression to third birth as an important component of that transition. The declining incidence of third births is manifested in two ways. First, the Total Fertility Rate (TFR) of Turkey has declined to close to reproduction level (Hacettepe University et al. 2004): from the latest 2003 Turkey Demographic and Health Survey (TDHS), it is estimated to be 2.2. Secondly, fertility preferences of married women are already to a great extent formed by a two-child family norm. The proportion of married women who do not want to have additional births increase sharply with the number of children they already have: 2 percent of women with no children and 78 percent of women with two live children (Ministry of Health et al. 1994). As the two-child family norm is becoming more widespread², three child mothers increasingly form a special group with special motivations. In this respect, examining third births are useful in order to identify groups of pioneers and laggards in the fertility transition process.

As most studies on fertility in Turkey have concentrated on aggregate fertility change there is a need of better research in order to discover the nature of fertility

² The fertility preferences of husbands are generally in accordance with their wife’s preferences. Information pertaining to husband’s preferences is available from a separate male questionnaire (Hacettepe University et al. 1999)

dynamics in different societal contexts. For this purpose we use the rich body of individual-level information provided by recent Demographic and Health Survey data of Turkey.

2. Background: General fertility trends in Turkey

Turkey has experienced intensive social and economical change since the early 20th century. The size and structure of its population have changed along with alterations of society. Turkish population trends can be observed in changes in basic demographic indicators. The improvements in health services and living standards have brought about a steady decline in child and adult mortality. The Crude Death Rate declined from around 30 per thousand in the 1940s to 7 per thousand at the beginning of the 2000s (SIS 2003). The second half of the 20th century also witnessed dramatic declines in fertility. In the early 1970s, the Total Fertility Rate (TFR) was about 5 children per woman, whereas current fertility is close to reproduction level. As a result, the age structure of the population has changed rapidly. In addition, urbanization is profoundly changing the spatial distribution of the population; it is nowadays predominantly concentrated in urban settlements (province and district centers)³. Intensive migration between regions, mainly from the east to the west and south, from interior to coastal regions, and from rural to urban areas is important in shaping the contemporary social structure of Turkey.

Demographic sample surveys fielded every five years since 1963 indicate a sustained decline in fertility. However there is no uniformity in change over the country and regional disparities have always been a central theme in demographic and other social-science literature in Turkey. Different sections of the population have been affected by social and cultural changes in different ways and at varying paces. The trends in urban and regional fertility indicate that some parts of the population are already experiencing below-replacement fertility. According to the TDHS-2003, the greatest contrast in fertility is between the eastern region and the rest of the country. TFR is 3.65 for women in eastern Turkey, which is about one-and-a-half children more than for women elsewhere in the country (Hacettepe University et al. 2004).

The distinctive level of the East region can be attributed to two factors; differential fertility between Turkish and Kurdish speaking women and the distribution of these ethnic groups over regions (see Table 1). Both age patterns in fertility and TFR differ between the two language groups. In 1995 -1998, the TFR of Kurdish speaking women was 1.9 times higher than that of Turkish speaking women and fertility was higher in

³ According to the 2000 Census 65 percent of the population in Turkey lives in urban areas (SIS 2003).

each age group. Turks and Kurds are often considered actors in different demographic regimes, at different stages of the demographic and health transition (Dündar 1998, Koç and Hancıoğlu 1999, Koç et al. 2000).

Table 1: Age Specific Fertility Rates¹ (ASFR; per thousand women) and Total Fertility Rate (TFR) by mother tongue of women in Turkey, 1995-98

Age Group	Turkey			eastern region	
	Turkish	Kurdish	Total	Turkish	Kurdish
15-19	54.1	75.7	59.8	68.2	68.6
20-24	152.0	213.1	163.3	172.0	248.8
25-29	134.5	234.1	150.0	159.5	251.8
30-34	77.6	175.9	93.1	90.5	211.7
35-39	29.2	120.3	41.9	61.9	140.5
40-44	9.3	35.0	13.2	34.7	47.6
45-49	0.7	0.0	0.6	0.0	0.0
TFR	2.29	4.27	2.61	2.93	4.84

¹ Rates are calculated for the 36 months preceding the survey date.
Source: Koç et al. (2000)

According to the TDHS-1998, two thirds of Kurdish speaking women in Turkey live in East region (Koç et al. 2000). In addition, 89 percent of Kurdish women who are not able to speak Turkish live there (Smith and Hoşgör 2003).

At first glance and according to precepts of the classical demographic transition theory, the different fertility levels may be attributable to differentials in socioeconomic status. On average, Kurdish households have lower socioeconomic status than their Turkish counterparts (İçduygu et al. 1999). On the other hand, discrepancies in fertility behavior between subgroups may remain when such conditions are controlled for.

There are clear discrepancies between these two groups as regards their integration into the general socioeconomic and cultural modernization process of Turkey. In this respect, language seems to be a crucial component. Smits and Hoşgör (2003) report that 89 percent of Kurdish women who are not able to speak Turkish (about a quarter of all Kurdish women) had no education and that 92 percent were illiterate. Among Kurdish women who were able to speak Turkish the percentage with no education decreases to

39 percent and of illiteracy to 34 percent⁴. The authors also emphasized that language ability among the Kurdish women is related to their degree of support for existing social norms, particularly regarding gender roles, and hence seem to matter for the reproduction of patriarchal ideologies. This may not entirely be a regional or local level phenomenon. Ayşe Betül Çelik's (2005) qualitative study on Kurdish migrant women in İstanbul asserts that linguistic barriers and illiteracy combined with general unemployment have driven most Kurdish women there into the category of "urban poor" with difficulties with adaptation to urban life. Clearly, the discussion on fertility transition in Turkey should cover the role of diversified cultural outcomes of the modernization process, which represents itself along the mother tongue lines of the country.

3. Data, methodology, and variables

The data used in this study originates from the 1998 Turkish Demographic and Health Survey (TDHS-98), the second survey in a series of three national demographic and health surveys conducted in the last ten years. The TDHS-98 was designed to provide information on fertility levels and trends, infant and child mortality, family planning, and mother and child health from a nationally representative sample. The survey was fielded between August and November 1998. Interviews were carried out in 8,059 households, with 8,576 (2,424 never married and 6,152 ever married) women and 1,971 husbands of currently married women. All women aged 15 to 49 who were present in the household the night before the interview or who generally lived in the households was eligible for survey. The sample was designed to provide estimation of demographic and health indicators for the nation as a whole, for urban and rural areas, and for the five major regions of Turkey. A weighted, multi-stage, stratified cluster sampling approach was used in the selection of the sample.

Even though the survey included a wide range of retrospective questions on birth histories and contraceptive usage of women, most background characteristics were not collected with individual life histories. That is, many useful attributes of women, such as education, migration, employment, family cycle, etc. were obtained only for their situation at the time of the survey. Thus, it was mostly impossible to examine these variables in conjunction with preceding births and to regard them as explanatory time varying variables connected to childbearing.

We include women in a first marital union at the time of the interview in our third birth analysis. There are two reasons why this is reasonable. The vast majority of

⁴ Of course most of the Turkish speaking Kurdish women would have learnt Turkish in public schools or public literacy campaigns.

Turkish women complete their reproductive career in their first marriage⁵. Secondly, in the questionnaire, higher-order marriages were neglected during the recording of marriage and birth-history information. Since we do not have information on the termination date of first marriages and the beginning of second ones, it is not possible to examine births and higher-order marriages in conjunction.

There are 4,273 two-child mothers⁶ included in our third birth study. These are women who were in their first union and who had had at least two births at the time of the survey. Cases with twin births at the second birth were excluded from the analysis. The observation starts with the birth date of the second child and ends with either the birth date of a third child or the survey date. Cases are right censored if no third birth event is observed before the survey in 1998.

Table 2 presents some basic information on the reporting quality of ever-married respondents: Turkish speaking women provided more complete information on their reproductive histories⁷ than their Kurdish counterparts implying that there are some differences in data quality by mother tongue group of women.

Table 2: Percentage of reproductive events for which ever-married respondents of TDHS-98 reported complete month and year, by mother tongue of women

	Respondent's date of birth	Date of Marriage	Date of birth of first child	Date of birth of second child	Date of birth of third child
All women	71.4	81.2	90.4	88.3	84.7
Turkish-speaking	78.1	85.7	93.7	91.7	89.2
Kurdish-speaking	36.5	55.3	72.8	72.0	68.6

Source: TDHS-98 data file

As an introduction to our data we employ Kaplan-Meier techniques to describe general childbearing patterns of Turkish and Kurdish speaking women in Turkey. Table 3 shows the cumulative proportions of ever-married women who progress to a next birth within five years from a birth of a given order. Table 4 shows the median length of closed birth intervals of different orders.

⁵ The data reveals that only 3.1 percent of all ever-married women had had more than one marriage.

⁶ The unweighted case number is 4338.

⁷ For each important reproductive event there is a flag indicating whether or not the case was imputed and the type of information on which the imputation is based.

Evidently, there are clear differences in childbearing behavior between Turkish and Kurdish speaking women. The former exhibits a pronounced tendency of stopping childbearing after parity two while we do not observe any similar pattern for the Kurdish speaking population. Following the birth of a second child, 52 percent of Turkish and 85 percent of Kurdish mothers have another child within five years. The progression to the third child, which can be regarded as a threshold in fertility transition, marks the most pronounced difference between Turkish and Kurdish speaking women. Likewise, the median duration of closed birth intervals is longer for Turkish speaking women compare to Kurdish speaking counterparts, at each parity transition as seen in the Table 4.

Table 3: Cumulative proportion of ever-married women who progress from one parity to the next within five years, by mother tongue of women

	All women	Turkish-speaking	Kurdish-speaking
M ⁻¹	91.3	92.0	88.1
1-2	80.5	77.8	95.0
2-3	58.2	52.1	85.6
3-4	58.5	51.4	84.5
4-5	59.2	49.6	83.8
5-6	61.2	52.0	78.8
6-7	64.8	54.0	81.0
7-8	65.6	59.3	70.2
8-9	56.2	45.5	66.8

M⁻¹ refers to marriage (parity 0). Source: TDHS-98 data file

Table 4: Median duration of closed birth intervals at different parity orders (in months) by mother tongue of women in Turkey

	All women	Turkish-speaking	Kurdish-speaking
M ⁻¹	13	13	16
1-2	27	28	22
2-3	29	31	24
3-4	27	29	25
4-5	27	29	25
5-6	25	27	23
6-7	25	26	24
7-8	25	26	24
8-9	25	28	24

M⁻¹ refers to marriage (parity 0). Source: TDHS-98 data file

The progression to a third birth, as any other type of life-course transition, does not occur at random or in isolation, but in relation to certain structures. The method we want to use in our analysis should be able to ascertain how and to what extent the transition to parity three is systematically related to a woman's own background and marriage characteristics. Because of the right-censored nature of data, ordinary regression techniques cannot be used to analyze relationships of third births. One appropriate way of analyzing such data is to apply proportional-hazard models. These models belong to a group of event-history models dealing with rates of transition from one social status to another. Transition-rate models have been defined as "general statistical techniques through which one can analyze how the transition rate depends on a set of covariates" (Blossfeld and Rohwer 2002). In other words, the transition rate⁸ is considered a function of some covariates and thus related to other social processes.

In our study, the risk of a third birth, or the transition rate from second to third parity, is estimated with respect to some basic background attributes of women and important characteristics of her first marriage. A relative risk of 1 for a certain level of a covariate indicates that the estimated third birth risk is the same as that of the reference group of the same covariate. A relative risk estimated to be greater (smaller) than 1 indicates a higher (lower) third birth risk than for the reference category. A woman's third birth risk is defined as the probability that she will experience a third birth the next month, given her individual and marriage characteristics and given that she has not had such a birth by the beginning of the month. Risks are assumed constant within each time interval but may vary across such intervals (the hazard rates are piecewise constant).

The basic time variable of the hazard regression is the number of months elapsed since the birth of the second child. The duration is measured in months and categorized into five intervals, covering age of second child from 0 to 18.5 years. The overall composition of our study population is presented in Appendix Table A1 which contains occurrences (third births) and exposure times (of two child mothers) by each of the variables we apply in our modeling procedure.

We employ seven time-fixed and two time-varying covariates. The first background variable is mother tongue of woman with two levels: namely, 'Turkish' and 'Kurdish and dialects'. Several other languages combined into an 'other' category⁹ were included in preliminary modeling. This latter category only comprises some 2 percent of two-child mothers. In order to simplify the presentation, this category is not included in subsequent analyses.

⁸ The transition rate also often is labeled as hazard rate, intensity, failure rate, or risk function.

⁹ Arabic, Armenian, Circassian, Georgian, Hebrew, Persian, Greek, Laz and East and West European languages. The largest of these minorities by far, with around 60 percent, consists of women whose mother tongue is Arabic.

Identifying an ethnic group is not a straightforward task, and it largely depends on the historical and cultural context. There are a number of approaches to identify ethnic groups but the language of a community is one principal marker (Weber 1961). It is not practical to include all possible questions helpful to identify ethnic groups in the TDHS survey. Thus, ethnic groups are classified from those who declared a particular language as their mother tongue.

Next, the age of the mother at the second birth is included in the analysis, with four different age categories. We expect that women who had a second child early in their reproductive career will have a higher transition rate to a third birth. Early age at second birth is also related to early age at marriage.

Literacy level is a commonly used socioeconomic indicator. In this study, it is included in the analysis with three levels: 'reads easily', 'reads with difficulty' and 'cannot read'. As for other covariates, literacy level refers to the ability at the date of the survey. It is assumed that reading ability is obtained before the first marriage and/or second birth and is not prone to significant change subsequently. Compared to employing educational-attainment level at the time of the survey, literacy level is likely to be less problematic as regards anticipatory problems¹⁰ (Hoem 1996) in the event-history analysis.

The premarital work experience of women is another socioeconomic indicator. The working experience of women was not collected for the whole life course, but properly refers to the situation before marriage. The variable reflects socio-cultural traits of women. Women who 'had not worked before marriage' and who 'had worked without social security' are categorized into one common level since those who had been employed without being covered by social security predominantly worked as unpaid family labor on the familial agricultural land or as some other kind of agricultural worker. In contrast, women who had been employed and covered by social security had worked in areas with an occupational ability, e.g., as teacher, nurse, factory worker, etc. The two types of working experiences are expected to have different impacts on reproductive behavior. More than half of the women in the study did not work at all before their first marriage.

An increase in women's education and economic independence may affect the overall well being of households and thereby the cost and benefit of childbearing. The experience of being employed and having a higher level of educational attainment allows women to be less dependent on their husbands and extended family. The improved status of women could allow them to exercise a higher say in the fertility decision process. In Turkey, previous studies have underlined the importance of

¹⁰ For the same reason, proximate determinants of fertility; like breastfeeding and contraceptive usage, which represents behavioral link between socioeconomic factors and marital fertility, were not taken into account in the analysis.

education and economic power in elevating women's status and reducing fertility too (Ergöçmen 1997). In our case, we expect to find lower third birth intensity if a woman is literate and has working experience.

The universality of marriage in Turkey has been demonstrated in several studies (Ergöçmen 1997, Ministry of Health et al. 1994, Hacettepe University et al. 1999). As a social norm, women are expected to get married no later than in their late twenties and eventually almost all women marry. For the TDHS-1998, only 6.5 percent of women aged 30 to 34 at the survey date were not or had not been married. Several cultural and religious norms have an influence on family-formation patterns. Some attributes of the family-formation process can be used to categorize the unions, in broad terms, as "traditional" or "modern". In this manner, three covariates are employed in the present study. First, payment of 'bride's money' to the family of the bride at marriage formation is included as an independent variable. The bride's money can be in cash or kind; the latter type is more widespread. The payment of brides' money, regardless of whether it has a nominal or symbolic value, is considered a reflection of patriarchal ideology that is likely to reduce the status of the wife and also of female children. One of the main functions of this type of payment is to compensate for the loss of a laborer from the bride's family (Timur 1972). Also, it is a social phenomenon reflecting the price of beauty and skill of young women and it represents the prosperity of the groom's family. Concerning its economic and social aspects, this type of marriage can be regarded as more closed and conservative in terms of family relations. In the data, one out of five marriages was established with the payment of bride's money. The custom is most pervasive among Kurdish speaking spouses where it occurs in 60 percent of marriages.

Secondly, the decision-making practice at the formation of the marital union is considered. In Turkey, the mutual consent of the spouses and the immediate family is common in the formation of a family. The arrangement of marriage by the families is common practice. Nevertheless, in most cases, the bride and groom both are asked for their consent too. It is also common that the decision to form a marital union is first made by the couple, which subsequently seeks the parents' consent. In our data, a third of marriages were established solely by the couple's decision, i.e., without their seeking their parents' consent. In the remaining cases, the parents' decision was involved in the formation process to some extent. It is legitimate to set up the two juxtaposed general categories of "modern" and "traditional" marriages as concerns the decision-making process. The arrangement of the marriage solely by the parents can be seen as a particular reflection of conservatism in the lifestyle. Such unions are more prone to the intervention of members of the extended family, which is likely to affect the subsequent fertility behavior as well. Our covariate has three levels: arrangement 'by themselves', 'by families' and 'other'. The 'other' category refers to the situation where both couple

and family consent plays a role in the marriage formation. It can thus be viewed as an intermediate variant in terms of the level of traditionalism.

Thirdly, a characterization of the household type at the beginning of marriage is included. Most newly formed marriages in Turkey are established in an extended family environment: according to the data, this type of beginning comprises 62 percent of marital episodes. The newly married couple usually does not form a separate household at the beginning of their marriage but resides in the husband's parental household. This can be seen as another reflection of patriarchal ideology. One expects to find higher third birth risks for women who began conjugal life in an extended household as compared to women who started marital life in a neo-local settlement.

Finally, we apply two time-varying covariates for calendar-year period and the duration elapsed since the second birth. The first time-varying covariate is intended to capture the influence of changes in the overall socio-economic and political environment on third birth intensities. We use four time periods in this categorization. From the foundation of the republic to the mid-1960s, Turkish governments to some extent implemented pronatalist policies. The Population Law of 1965 marked a policy change in the opposite direction and previous restrictions on contraceptives and abortions were somewhat liberalized. In 1983, the Population Planning Law was revised again. More liberal comprehensive regulations were implemented with, for example, abortions being possible up to the tenth week of pregnancy and the possibility of voluntary surgical contraception (SPO 1993). Also, the last two TDHS studies reveal that there was an increasing shift from the 1980s to the 1990s towards more modern contraceptive usage (Ministry of Health et al. 1994, Hacettepe University et al. 1999). This shift in contraceptive behavior is likely to be associated with a decreased progression risk after 1983.

The period factor also captures other changes in Turkish society. The economy has undergone a radical transformation from an agricultural base to industrial and service activity, particularly within the last two decades. This process is likely to have inhibited fertility in general and third- and higher-order births in particular, especially for women in economically more developed regions. The last two decades also witnessed other changes in the economic structure of the country. The economic strategy before 1980 was mainly based on 'Five-Year Development Plans' in which protectionism was the dominant economic policy. In contrast, at the beginning of the 1980s, Turkey began a series of reforms designed to shift the economy from this *statist* system to a private sector free-market model. The economic growth has been high¹¹ but also very volatile; sharp recessions and financial crises occurred particularly in the last period of this study. In addition, the rapid economic development contributed to growing differences

¹¹ GDP per capita increased continuously. The mean value of GDP in US\$, by period, is as follows; 1975-1982: 2109, 1983-1987: 3379, 1988-1992: 4589, 1993-1998: 5902. (See Appendix Table A2).

and disparities between rich and poor segments of society, and rich and poor regions of the country. The social development has not paralleled the economic growth performance (Human Development Report 1996). Existing disparities within the country have been sustained and economic inequality cuts across regions, social groups, gender, age and urban-rural residence (UNDP 2005).

The last two decades, 1984 to 1999, witnessed a harsh armed conflict between the illegal armed Kurdish Workers' Party (PKK) and Turkish armed forces. A substantial number of villages and adjacent arable lands were abandoned during the period, especially between 1989 and 1992, in east and southeast Anatolia. The Kurdish population living in villages and pastures was often displaced by both the activities of terrorist movements and the struggle of Turkish armed forces against those groups. Today the majority of displaced people live in poverty in urban areas throughout the country. In most circumstances, abrupt displacement disrupts traditional familial and community bonds. It is a traumatic event and for individuals displacement may cause feelings of insecurity and anxiousness. For this reason, the displacement process is likely to have affected third birth risks of Kurdish women having experienced this type of migration. Apart from these displacements, for economic and environmental reasons the migration out of the East region has always been prevalent since the 1960s. Unfortunately, because of the lack of data on migration histories we are not able to investigate the effect of migration on the third birth risks. Nevertheless, the armed conflict in the East region may have had a retarding effect on Kurdish speaking women's fertility transition.

4. Third birth developments in Turkey

Our model fitting is conducted in a stepwise procedure. First, individual demographic characteristics (mother tongue and age of the woman at the second birth) and the time-varying variables are included in the model. Secondly, covariates on socioeconomic characteristics (literacy and work before marriage) are introduced. Lastly, the covariates that represent cultural traits of the marriage are added.

Model 1 of Table 5 provides a first overview of relative third birth risks. We note a considerable difference in risk between the categories of 'mother tongue of the woman', 'calendar period' and 'age of mother at second birth'. The highest progression risk among the mother tongue groups is observed for Kurdish speaking women; they have more than double the progression risk of Turkish speaking women. The first level of the 'period' covariate has the highest progression risk and then the risk diminishes at each subsequent level. In the last period, 1994 to 1998, the risk is almost 70 percent lower

Table 5: Relative risks of third birth, by characteristics of two-child mothers in Turkey

Factors – Levels	Model 1	Model 2	Model 3
Duration since second birth	***	***	***
< 1.5 year	1(13.91 [^])	1(10.54 [^])	1 (6.93 [^])
1.5 – 2.4 years	2.80	2.82	2.84
2.5 – 3.9 years	2.51	2.58	2.61
4.0 – 5.9 years	2.06	2.14	2.18
6.0 – 18.5 years	0.83	0.84	0.87
Age at second birth	***	***	***
-20	1	1	1
21-25	0.69	0.74	0.77
26-30	0.42	0.48	0.51
31+	0.28	0.35	0.37
Mother tongue	***	***	***
Turkish	1	1	1
Kurdish	2.21	1.60	1.52
Calendar period	***	***	***
<1983	1	1	1
1983 – 1987	0.66	0.78	0.81
1988 – 1992	0.45	0.59	0.61
1993 – 1998	0.32	0.46	0.48
Literacy		***	***
Reads easily		1	1
Reads with difficulty		1.47	1.35
Cannot read		1.83	1.66
Work experience		***	**
Yes, with social security		1	1
No or without social security		1.85	1.59
Bride's money			***
Not Paid			1
Paid (in cash or kind)			1.27
Marriage arrangement			***
By couple			1
By families			1.21
Other			1.11
Family type			***
Nuclear family			1
Extended family			1.30
Log-likelihood	-13194.4	-13077.6	-13062.3

[^]Absolute risk for first duration level, per 1000 mother months

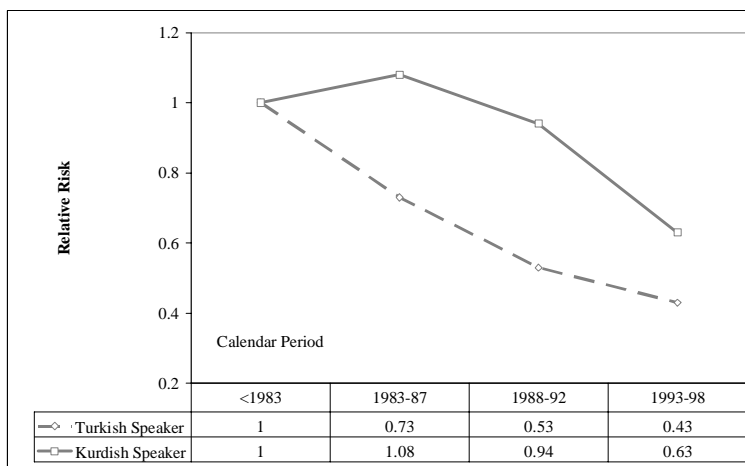
Significance test of factors: * 0.05 ≤ p ≤ 0.1 ** 0.01 ≤ p ≤ 0.05 *** p ≤ 0.01

than for the period before 1983. The model also reveals that, if the mother has the second child later in the reproductive time span, then the risk of a subsequent birth diminishes substantially.

The risk difference between women from the two mother-tongue groups diminishes when socioeconomic covariates are included in the model (Model 2). Nevertheless, Kurdish speaking women still have a 60 percent higher third birth risk. Women who cannot read and those who can read only with difficulty have higher progression risks than women who can read easily. Those who cannot read have an 83 percent higher progression risk than those who read easily. The latter group is likely to more often consist of women who had higher educational attainment: secondary school and above. The findings are consistent with recorded fertility differences by educational level of women in Turkey.

Interaction effects of covariates used in Model 2 demonstrates how progression risks are dependent on different combinations of levels of these covariates. The first interaction model (Figure 1) constructed between the variables for mother tongue and period shows that the third birth risk of Kurdish speaking women started to decrease considerably later than that of Turkish women; the risk for the former group declined noticeably only after 1988 to 1992. For Turkish-speaking women a continual decrease is observed for the whole study period.

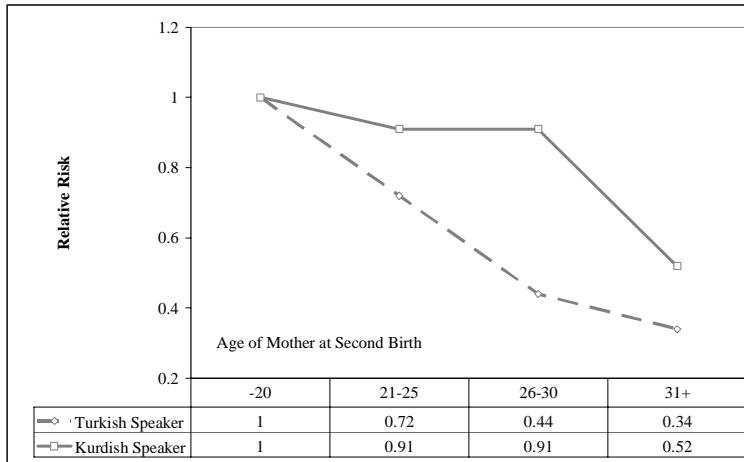
Figure 1: Relative risk of third birth, by calendar period and mother tongue, controlling for the other factors in Model 2 of Table 5. Risks relative to first calendar period for each language group.



*** $p \leq 0.01 \chi^2 (df : 3) = 22.95$

The second interaction involves age of mother at second birth and mother tongue (Figure 2). The effect of age at second birth is very different for the two ethnic groups. Having a second birth at a relatively old age is inversely related with having a third child among Turkish women. For Kurdish women, there is a very loose relationship of this kind. Late marriage and late onset of childbearing generally involves a distinct group of women yet these distinctions do not translate into reduced third birth fertility for the Kurdish speaking mothers. Only after age 30 is there a significant decrease in risk for this population. The patterns are consistent with the general age specific fertility schedules presented in Table 3.

Figure 2: Relative risk of third birth, by age of mother at second birth and mother tongue, controlling for the other factors in Model 2 of Table 5. Risks relative to first age category for each language group.



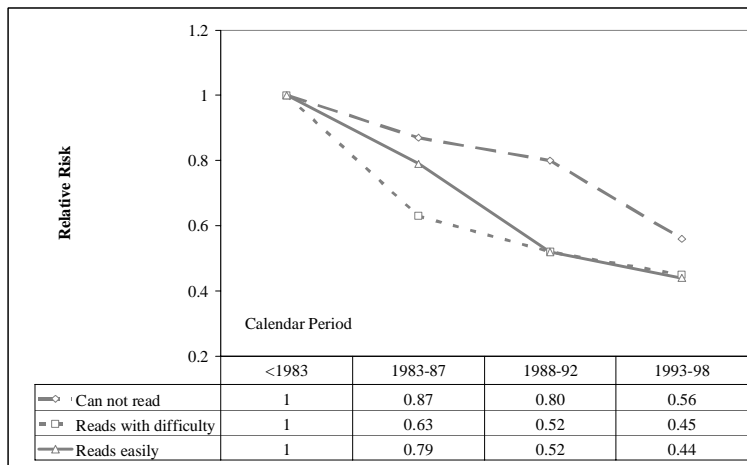
*** $p \leq 0.01 \chi^2 (df : 3) = 16.99$

The third interaction involves literacy and period (Figure 3). The progression risk decreases after 1983, regardless of the literacy level of the women but with different paces. The slowest change occurred for women who are not able to read. Note that illiteracy is much more widespread among the Kurdish speaking population.

A three-way interaction of mother tongue, literacy and period yields further detail to patterns in third birth decline by the calendar periods we cover (Table 6). This is done by comparing third birth risks for different groups with the risk of the same group in the calendar period of 1982 and preceding years. For Turkish speaking women, a

sustained decrease in third birth fertility in the last two decades is obvious in all literacy categories. Also, the fertility decline does not differ significantly between the groups. In contrast, patterns do differ between various categories of Kurdish speaking women. For Kurdish speaking mothers who are able to read at least to some extent, the third birth risk begins to decline in the period from 1988 to 1992. The Kurdish speaking women who were unable to read are clearly the most resistant group to fertility change. Their third birth risks did not start to diminish until the very last period.

Figure 3: Relative risk of third birth, by literacy and period, controlling for the other factors in Model 2 of Table 5. Risks relative to first calendar period for each literacy group.



** $p \leq 0.05 \chi^2 (df : 6) = 16.78$

In the final model of Table 5, Model 3, the remaining covariates related to cultural aspects of marriage are included as well. The impacts of these covariates are in accordance with the theoretical framework of our study. For each of these covariates, the level related to more 'modernized' behavior is chosen as the reference category and has the lowest third birth risk. Women whose family did not receive bride's money, who herself made the marriage decision together with her husband, and who began the marital union in a nuclear family had lower progression risks than women who married in a more customary manner. Women who married with the payment of bride's money have an almost 30 percent higher progression risk to a third birth than women who

married without such a payment. Similarly, women who had less autonomy in the decision process of marriage have a 10 to 20 percent higher risk, and women who started conjugal life in an extended settlement have a 30 percent higher third birth risk when the effect of all other factors are controlled for.

Table 6: Relative risk of third birth, by different combinations of mother tongue, literacy and calendar period, controlling for the other factors in Model 2 of Table 5. Risks relative to first calendar period for each combination of literacy and mother tongue.

Interaction: Mother Tongue * Literacy by Period ^{***}	< 1983	1983-87	1988-92	1993-98
Turkish * Reads easily	1	0.77	0.52	0.43
Turkish * Reads with difficulty	1	0.59	0.49	0.38
Turkish * Cannot read	1	0.74	0.63	0.52
Kurdish * Reads easily	1	1.25	0.60	0.39
Kurdish * Reads with difficulty	1	0.90	0.63	0.64
Kurdish * Cannot read	1	1.05	1.02	0.64

^{***} $p \leq 0.01$ χ^2 (df : 17) = 37.87

The effect of marriage attributes on having a third birth is related to calendar period and mother tongue, as demonstrated in Table 7. A close inspection reveals, for example, that Kurdish speaking women who married with traditional attributes had a slight increase in third birth risks from the period before 1983 to that of 1983 to 1987. Another impression from the interactions of marriage attributes with ethnicity and calendar period is that Kurdish speaking women who married in more traditional ways seem to constitute the most lagging groups as concerns fertility decline in Turkey. Contrary to general trends, third birth fertility is maintained longer at a relatively high level for Kurdish women with such attributes. The decline in third birth fertility of these women is not evident until in the second half of the 1990s. In contrast, for Turkish speaking women the decline in progression risks is much less dependent on their marriage characteristics. Indeed, by the end of our study period, third birth risks have declined more or less to the same extent for those who married in modern and traditional manners.

Table 7: Relative risk of third birth, by different combinations of mother tongue, calendar period, and each of the factors bride’s money, family type and marriage arrangement, controlling for the other factors in Model 3 of Table 5. Risks relative to first calendar period for each combination of marriage characteristic and mother tongue

	< 1983	1983-87	1988-92	1993-98
¹ Interaction: Mother tongue * Bride’s money by Period***				
Turkish * Not paid	1	0.74	0.55	0.44
Turkish * Paid (in cash or kind)	1	0.72	0.47	0.41
Kurdish * Not Paid	1	0.87	0.58	0.45
Kurdish * Paid (in cash or kind)	1	1.16	1.20	0.72
² Interaction: Mother tongue * Family type by Period***				
Turkish * Nuclear family	1	0.59	0.61	0.40
Turkish * Extended family	1	0.78	0.49	0.45
Kurdish * Nuclear family	1	0.95	0.76	0.64
Kurdish * Extended family	1	1.12	0.99	0.63
³ Interaction: Mother tongue * Marriage arrangement by Period***				
Turkish * Couple	1	0.57	0.44	0.39
Turkish * Family	1	0.76	0.55	0.45
Turkish * Other	1	0.95	0.56	0.35
Kurdish * Couple	1	1.11	0.70	0.59
Kurdish * Family	1	1.06	1.00	0.62
Kurdish * Other	1	2.38	1.03	0.77

¹ *** p <0.01 χ^2 (df : 10) = 34.16

² *** p <0.01 χ^2 (df : 10) = 40.27

³ *** p <0.01 χ^2 (df : 17) = 34.86

5. Conclusions

In recent decades, Turkey has experienced rapid change in its demographic structure. This has occurred together with transformations in its social, political, and economic life. Changes in its social life appear in areas such as the liberation of social and political activity, internal migration and urbanization, extension of a free market economy, etc. These changes, likely to carry on in the near future, have had profound effects on individuals’ lives including their fertility dynamics.

In this study, we estimated relative risks of third births by demographic and socioeconomic characteristics of two-child mothers and by various attributes of their

marriages. All factors were related to third birth risks, and our study allowed us to gain further insights into the specificities of the fertility transition of Turkey. We found, for example, that Turkish speaking women who read easily and who were employed and covered by social security before their first marriage had the lowest transition rate from the second to a third child. In contrast, Kurdish speaking women who could not read and who did not work with social-security coverage had the highest third birth risk.

Marriage characteristics related to the degree of traditionalism or modernity in family lifestyles has an influence on the fertility process. The effect of such marriage attributes has not evolved in the same way over calendar time for the two main ethnic groups in Turkey. For Turkish speaking women the decline in third birth risks has taken place at a relatively similar pace for those who married in a traditional manner and those who married in more modern ways. In contrast, customary marriage behavior has managed to support the high fertility of Kurdish speaking women much longer. These groups did not experience declines in third birth fertility until the very last decade of our study.

One explanation for the different pace in fertility decrease of the two main ethnic groups in Turkey could be that it is related to the settlement pattern of women. Turkish speaking women are predominantly located in western regions and more urbanized areas. These are the most modern parts of the country. They are more likely to have been exposed to more 'modern' fertility norms and to have access to modern contraceptives. By contrast, Kurdish speaking women are to a larger extent subject to the more traditional values and ineffective contraception methods that prevail in rural conditions in the east of the country. For future research, it would be interesting to aim at disentangling the role of possible contextual factors; namely, geographical, cultural, political, and economic ones, for fertility change in Turkey. The cross-sectional nature of much of the present DHS data, in particular the lack of information on migration histories, hampers such an extension.

The results may suggest that the segments of the population that are more integrated into the modernization process of Turkey also are changing their fertility behavior most rapidly. In this respect socioeconomic attributes are not the only ones to pay attention to. Numerous studies have pointed out the critical role of cultural dimensions for this process, which also influence the timing and pace of fertility decline. Lesthaeghe (1977), for instance, argued that in Western Europe important ideational shifts occurred during the course of fertility transition and they were not necessarily concurrent with the level of economic modernization. He found clearly differentiated fertility patterns for different language groups, which otherwise had very similar socioeconomic development levels. This brought about the notion that the fertility transition was actually based on the spread of new ideas and behaviors by means of language, ethnicity, neighborhood and workplace, or other channels of

communication and exchange (De Bruijn 1999). Likewise, according to Bongaarts and Watkins (1996) the global fertility transition between the 1950s and 1990s confirmed the role of social interaction as being indispensable for the onset and pace of fertility decline. They also refer to socioeconomic developments as a potent factor since it changes the cost and benefits of children. Nonetheless, opinions on having small versus large number of children, information on and acceptance of modern contraception and other ideational changes are able to diffuse more easily among populations with similar cultural traits. In this regard, our findings points out the importance of the mother tongue for the fertility transition process in Turkey. The third birth risks are lower for those who have higher socioeconomic status, i.e., who are literate and had worked before marriage, but the effects are clearly differentiated among Turkish and Kurdish speaking women. We also showed that several other cultural factors, related to family systems, are of importance and that it is fruitful to consider a wider spectrum of such variables in fertility studies than is usually the case.

The fertility dynamics of Kurdish parents is an important factor in determining when and how the demographic transition in Turkey will be completed. As an increasing proportion of couples acknowledge replacement fertility as an optimal level for their own reproductive lives, the final stage of the fertility transition is likely to materialize. For Turkey, we can see that modernization, industrialization, urbanization, and the diffusion of urban-type norms make crowded and complex household types less feasible to maintain. Increasing educational standards and postponement of marriage allow for an increasing proportion of women to be involved in market-centered economic activity. All these trends lead to a higher propensity to establish smaller and less extended families. The present study shows that even the most resistant group to fertility decline showed the beginnings of a decrease in third birth risks in the late 1990s. This implies that we can expect further declines in aggregate Turkish fertility also in the near future.

6. Acknowledgements

This study was prepared at the International Max Planck Research School of Demography during my stay as a PhD fellow in the winter semester 2005/06 and the first version was published as a Working Paper (Yavuz 2005). I am particularly grateful to Dr. Gunnar Andersson for very insightful comments and suggestions on this work and for editorial advice.

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Table A1: Sample composition for the analysis of third birth risks in Turkey

Factors – Levels	Exposure time (months)		Occurrences (third births)	
	N	%	N	%
Duration since second birth				
< 1.5 year	15157	6.1	556	21.5
1.5 – 2.49 years	27811	11.1	763	29.5
2.5 – 3.99 years	43155	17.3	649	25.1
4.0 – 5.99 years	47025	18.8	360	13.9
6.0 – 18.5 years	116858	46.7	261	10.1
Age at second birth				
-20	38713	15.5	759	29.3
21-25	122744	49.1	1393	53.8
26-30	71258	28.5	382	14.8
31+	17290	6.9	55	2.1
Mother tongue				
Turkish	224595	89.8	1954	75.5
Kurdish	20379	8.2	509	19.7
Other	5033	2.0	125	4.8
Calendar period				
<1983	48410	19.4	1005	38.8
1983 – 1987	39514	15.8	525	20.3
1988 – 1992	57727	23.1	476	18.4
1993 – 1998	104355	41.7	584	22.6
Literacy				
Reads easily	184182	73.7	1335	51.6
Reads with difficulty	28105	11.2	373	14.4
Cannot read	37718	15.1	881	34.0
Work experience				
No	138786	55.5	1582	61.1
Yes, without social security	80216	32.1	916	35.4
Yes, with social security	31004	12.4	90	3.5
Bride's money				
Not Paid	199235	79.7	1611	62.2
Paid (in cash or kind)	50771	20.3	977	37.8
Marriage arrangement				
By couple	83275	33.3	566	21.9
By families	154123	61.6	1882	72.7
Other	12608	5.0	140	5.4
Family type				
Nuclear family	93666	37.5	589	22.8
Extended family	156340	62.5	1999	77.2

Table A2: Trends in Human Development Indices for Turkey, 1980-98

	Life expectancy at birth (years)	Adult literacy rate (% age 6 and above)	GDP per capita PPP in USD	Life expectancy index	Education index	GDP development	Human dev. index (HDI)
1980	61.9	68.7	2,252	0.615	0.628	0.520	0.588
1981	62.3	69.7	2,542	0.622	0.635	0.540	0.599
1982	62.6	70.8	2,724	0.627	0.647	0.552	0.609
1983	63.0	71.9	2,914	0.633	0.664	0.563	0.620
1984	63.5	73.0	3,174	0.642	0.673	0.577	0.631
1985	64.0	74.1	3,340	0.650	0.682	0.586	0.639
1986	64.5	74.9	3,502	0.658	0.689	0.597	0.648
1987	65.1	75.6	3,965	0.668	0.697	0.614	0.660
1988	65.6	76.4	4,114	0.677	0.703	0.620	0.667
1989	65.9	77.2	4,213	0.682	0.709	0.624	0.672
1990	66.3	78.0	4,691	0.688	0.715	0.642	0.683
1991	66.6	78.8	4,822	0.693	0.725	0.47	0.689
1992	66.9	79.6	5,105	0.698	0.734	0.656	0.696
1993	67.3	80.4	5,562	0.705	0.743	0.671	0.706
1994	67.7	81.2	5,280	0.712	0.750	0.662	0.708
1995	68.1	82.0	5,620	0.718	0.755	0.672	0.715
1996	68.5	82.3	5,999	0.725	0.755	0.683	0.721
1997	68.9	83.2	6,463	0.732	0.758	0.696	0.728
1998	69.3	84.0	6,486	0.738	0.763	0.696	0.733

Source: National Human Development Report Turkey 2001 (<http://www.un.org.tr/undp/pdf/nhdr/tablo%201.pdf>)

Human Development Index: A composite index measuring average achievement by three basic dimensions of human development: a long and healthy life (life expectancy index), knowledge (education index), and a decent standard of living (GDP development). For details of how the indices are calculated see *Technical Notes of* http://hdr.undp.org/reports/global/2004/pdf/hdr04_backmatter_2.pdf.

