HACETTEPE UNIVERSITY INSTITUTE OF POPULATION STUDIES

Economic and Social Demography Program

FERTILITY DECLINE IN TURKEY FROM THE 1980s ONWARDS: PATTERNS BY MAIN LANGUAGE GROUPS

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ACCEPTANCE AND APPROVAL

This is to certify that we have read and examined this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Philosophy in Economic and Social Demography.

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ABSTRACT

Turkey entered into the last phase of its demographic transition since the 1980s, with a wide regional disparity ranging from east to west. The purpose of this thesis is to examine recent fertility decline and differentials by main language groups in Turkey from a birth order perspective. The study aims to identify different groups in the fertility decline process: the pioneers and the laggards. The empirical part of the study is based on recent approaches and methods of causal analysis and has exploited information provided by the latest 'Turkey Demographic and Health Survey-2003 (TDHS-2003)'.

The analysis has shown that the propensity for first time motherhood has been declining since the 1980s. However, the duration between first marriage and first birth did not notably change. The period effects in the quantum and tempo of fertility are clearly visible at the second and higher birth orders. There has already been a substantial decline in the transition to third and fourth births and the postponement has begun to emerge in the transition from first to second birth as well. Parity progression intensities of Turkish speaking mothers are lower than Kurdish speaking mothers which implies that the fertility decline started much later for the latter group. The study points out important distinctions according to different groups of women in the contemporary fertility decline. Highly educated Turkish speaking women appear to be pioneers of very low fertility behavior, whereas Kurdish speaking women who don't know Turkish constitutes the laggards in the fertility transition.

A combination of individual socioeconomic and socio-cultural factors is necessary but not sufficient to explain the fertility decline process and differential fertility behavior between the two mother tongue groups in Turkey. The study suggests that the fertility transition in Turkey can be attributed to both structural changes in society and a diffusion process of modern parity-specific fertility limitation, via the Turkish language.

ÖZET

Türkiye 1980'lerden sonra, doğu batı doğrultusundaki büyük farklılıklar devam etmekle birlikte, doğurganlık geçişinin son aşamasına girmiştir. Bu tezin amacı Türkiye'de ana dil gruplarına göre doğurganlıkta yakın zaman içinde gerçekleşen azalma ve farklılıkları doğum sırası yaklaşımı ile incelemektir. Çalışma, doğurganlığın düşüş sürecine öncülük eden ve bu süreçte geride kalan farklı grupları belirlemeyi hedeflemektedir. Çalışmanın ampirik bölümünde en güncel nedensellik araştırması yaklaşım ve yöntemleri, '2003 Türkiye Nüfus ve Sağlık Araştırması (TNSA-2003)' verisine uygulanmıştır.

Analiz, 1980'lerden beri ilk defa anne olma hızının azalmakta olduğunu göstermiştir. Buna karşın, ilk evlenme ve ilk doğum arasındaki sürede önemli bir değişim gerçekleşmemiştir. Doğurganlığın kuatum ve tempo boyutları üzerinde dönem etkileri ikinci ve daha üst sıralardaki doğumlarda açık bir biçimde gözlenmektedir. Üçüncü ve dördüncü doğumlara geçiş hızları önemli derecede azalırken, ilk doğumdan ikinci doğuma geçiş süresi uzamaktadır. Türkçe konuşan annelerin bir sonraki doğuma geçiş hızları Kürtçe konuşan annelere göre daha düşüktür. Bu durum, doğurganlığın düşmesinin ikinci grupta çok daha sonra başladığı anlamına gelmektedir. Çalışma yakın zamandaki doğurganlığın düşmesinde önemli derecede farklılık gösteren grupları işaret etmektedir. Yüksek eğitimli Türkçe konuşan kadınlar düşük düzey doğurganlık davranışının öncüleri olarak görülürken, Kürtçe konuşan ve Türkçe bilmeyen kadınlar doğurganlık geçişinde geride kalan grubu teşkil etmektedirler.

Türkiye'deki doğurganlığın düşmesi ve ana dil gruplarına göre farklılıkların açıklanmasında bireylerin sosyoekonomik ve sosyokültürel özelliklerinin bileşenlerinin incelenmesi gerekli fakat yetersiz bir yaklaşım olacaktır. Türkiye'de doğurganlık geçişinin açıklanmasında hem yapısal değişimlerin etkisi hem de doğum sayısına bağlı doğurganlığı sınırlama davranışının Türkçe vasıtasıyla yayılmasının etkisi göz önünde tutulmalıdır.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to all those who gave me the possibility to complete this study. There are many people who contributed to my work at different stages with their support, patience and understanding, all of which made the outcome worthwhile.

At first, I want to thank to Hacettepe University, Institute of Population Studies (HUIPS) for giving me the opportunity to commence and finish this thesis. My first encounter with the HUIPS goes back to summer of 1998 when I had the chance to join the research group of the '1998 Turkey Demographic and Health Survey' (TDHS-1998) project. After having a three-week intensive training course, I worked nearly two months as a 'field editor' in the eastern region of Turkey. This first fieldwork experience was so exciting and stimulating that I decided to follow a career as an academician; specifically, a demographer. The next year, I registered in the masters program of the institute and start to work as a research assistant. Having completed the M.A. program in mid-2002, I decided to enroll in the doctoral program at HUIPS.

I would like to express my gratitude to all the lecturers at HUIPS for my initial training in demography. Besides taking courses, I took part in different survey projects between 2000 and 2005. I had the chance to take part in the '2003 Turkey Demographic and Health Survey' (TDHS-2003) project from beginning to end. During its fieldwork, I worked as a 'field supervisor' in the southern region of Turkey. The work was a very exciting experience because I was aware that I could use the data for my PhD dissertation.

By the time I began the doctoral program at HUIPS, one of my colleagues, Elif Kurtuluş Yiğit, drew my attention to the interesting courses offered by the 'International Max Planck Research School for Demography (IMPRSD)' in Rostock,Germany. I applied to this school three times—for the 2002/2003, 2004/2005 and 2005/2006 winter semesters—and each time my applications were accepted. Starting from September 2005, I was accepted as a PhD student at the

‘Laboratory of Contemporary European Fertility and Family Dynamics’ (Division 2), where I completed this dissertation. My gratitude goes to two directors here. First, I owe my thanks to Proff. Dr. Sabahat Tezcan, director of HUIPS, for allowing me to use official vacations during the first two winter semesters. Second, I give my thankfullness to Proff. Dr. Jan Hoem, director of ‘Max Planck Institute for Demographic Research (MPIDR)’, for accepting me into the winter schools and, later, to Division 2.

During the winter semesters, I took several courses and seminars on recent developments in demopraphy in Rostock and Stockholm. Students were often required to write a mini-project to complete their courses at IMPRSD. The time and effort I spent on finishing mini-projects became the driving force of my academic progress. While producing these papers, I actually developed the core structure of the dissertation. The material I produced also helped me to give several presentations, publish two working papers and one peer-reviewed research article.

From the beginning of my first stay in MPIDR, I was fortunate to meet and work with distinguished demographers and friends. At first, I should mention my supervisor and friend Assoc. Proff. Dr. Gunnar Andersson. I find myself one of the luckiest PhD students in the institute for taking his courses and for his supervision. I am deeply indebted to Gunnar for his stimulating suggestions, insightful comments, editorial help, positive thinking and encouragement throughout the time I spent researching and writing this thesis. My appreciation also goes to Proff. Dr. Jan Hoem, Gerda Ruth Neyer, Michaela Kreyenfeld and Laura Bernardi. Their lectures and suggestions enriched my demographic knowledge and scientific reasoning.

At different stages of my work, I presented my study at team meetings of Division 2. The members of the team changed over time, though enthusiasm of the group remained high. I want to give thanks to all the colleagues who were ready to read and discuss different stages of my work; Annett Fleischer, Avia Jasilioniene, Cordula Zabel, David Alich, Dora Kostava, Dorothea Rieck, Hill Kulu, Karin Böttcher, Katja Köppen, and who all gave me a lot of helpful comments.

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This study was carried out as a collaborative work between the two institutes. I wish to extend my thanks and appreciation to Assoc. Proff. Dr. Turgay Ünalan, who supervised the dissertation at HUIPS. At various stages of my work I also received helpful comments and ideas from Assoc. Proff. Dr. İsmet Koç and Mehmet Ali Eryurt. Yadigar Çoşkun and Şebnem Canpolat offered me ‘logistic’ help by sending various documents.

Finally, my thanks and gratitude goes to my family members. They have always supported me in various ways during my stay in Ankara and Rostock. I send my love and gratitude, especially to my parents and my aunt Filiyet for their continual devotion from the beginning of my life.

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I. INTRODUCTION

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). Demographic sample surveys fielded every five years since 1963 indicate a sustained decline 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.

Urbanization is profoundly changing the spatial distribution of the population. 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. Today, the demographic profile of the country is manifested in its young age structure. The prospective result of rapid fertility decrease and the completion of Turkey's demographic transition indicate, however, that Turkey will soon face an aging of its population.

Turkey's modernization, socioeconomic development and accompanying social change, came into a new phase with the 1980s. Changes in its social life appear in areas such as extension of a free market economy, volatile economic growth during 1990s, continuing internal migration and urbanization, the liberation of social and political life, attempts of accession to the European Union, and globalization with its new social and cultural dimensions have characterized this era. These changes, which are likely to carry on in the near future, have had profound effects on individuals' lives. These various macro societal changes have exerted an impact on fertility behavior. In this way, fertility has maintained its decline throughout the 1980s and 1990s.

The trends in urban and regional fertility indicate that some parts of the population are already experiencing below replacement fertility in Turkey. 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. According to the TDHS-2003, the greatest contrast in fertility is between the East region and the rest of the country. Total Fertility Rate (TFR) is 3.65 in East region that is about 1.5 children more than for women elsewhere in the country (Hacettepe University et. al. 2004).

The distinctive level of fertility in East region can be attributed to differential fertility between Turkish and Kurdish speaking women and the distribution of these ethnic groups over regions. 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 each age group. Therefore these two groups 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). Turkish and Kurdish speaking groups in fact have distinct social, economic, cultural and political life experiences. This study argues that the different experiences of these groups lead to variations in their demographic behaviors.

Most studies on fertility in Turkey have concentrated on quinquennial period aggregate fertility changes. Differences in fertility between subgroups generally have been attributed to socioeconomic differentials. Nevertheless, when social change reduces group differences in socioeconomic characteristics or when such conditions are controlled statistically, discrepancies in fertility behavior between subgroups may remain. The ongoing fertility decline is in need of better research in order to discover its pace, extent and nature in different societal contexts.

I.1.RESEARCH AIMS AND RELEVANCE OF THE TOPIC

The present study aims to gain further insights into the specificities of the recent fertility decline and differentials in Turkey. For this reason, the study intends to examine changing childbearing trends over the last two decades and differentials by the main mother tongue groups. It aims at disentangling the role of different factors that may be related to social change of that kind.

Several studies have used mother tongue information as an adequate proxy of ethnicity in the Turkey's context. This approach treats mother tongue characteristic as a sole marker in establishing an ethnic group's boundaries and leaves less room for fluidity of ethnic identities. However, classification of ethnic groups actually requires a more complex procedure. Information used for this purpose should reflect different aspects of ethnicity concept. For example, apart from the mother tongue characteristics, the language respondents master the best in their lifetime could be employed as another marker of ethnic identity. Existing data source do not enable to construct such kind of elaborate ethnicity categories. For this reason, I prefer to use the term 'mother tongue groups' instead of 'ethnic groups' throughout in this study.

The study intends to examine fertility decline process and differentials from a birth order perspective. The term *parity* is used by demographers to denote the number of children a woman has already had, and the *birth order* is used to refer to the children women have in the order in which they appear (first births, second births, and so on) (Hinde, 1998). As the fertility behavior turns into a matter of calculus choice, couples choice to bear additional children depends upon the number of children they already had. Birth order becomes a third fertility dimension, next to age of mother and time since previous birth (Lutz 1989).

An analysis of birth orders can depict childbearing patterns as covering two important demographic aspects of fertility behavior. The first aspect is '*quantum*', referring to the proportion of women who make the transition one parity to the next. The second aspect is '*tempo*', which relates to the time taken to move to the next higher parity by women who continue childbearing. Examination of parity

progressions thereby shows demographic aspect of childbearing behavior; spacing and stopping behaviors. Additionally, this kind of analysis could illuminate economic, social and cultural dimensions of childbearing patterns as well. In fact each parity transition is based on different motivations which are formed by various societal and individual factors.

In Turkey, most recent demographic survey and health survey (TDHS-2003) shows that the number of children desired significantly declines with parity (HUIPS, 2004). Social norms in Turkey strongly prescribe marriage and to have at least one child. The first birth has a significant role in the future life of each individual woman; transition into motherhood has broad implications for women's changing roles and statuses. The age at which childbearing begins can influence both the timing of subsequent births and completed family size of a woman. In countries like Turkey, where childbearing out of marital unions is negligible, increasing age at first marriage cause postponement of first births and this would play an important role in the overall fertility decline.

The second birth may have a different meaning than the first one. Arrival of the first child is usually valued because this transition provides couples parental status and commitment to their relationship. Second children are valued primarily as siblings for the first (sibling value). Several studies have demonstrated that most people outweigh their childrearing costs of the first and second children because they provide social/normative, psychological/emotional and economic/utilitarian benefits.

As populations move towards a modern parity-specific fertility limitation; that is spread of "two-child norm" among different segments of the society, the third child represents the pivotal point in the fertility transition (Van de Kaa 1987, Feeney and Feng 1993, Hoem et al. 2001, Schoen and Canudas-Romo 2006). Having a higher-order birth does not have unique value in modern societies due to significantly high childrearing costs (Thomson, 2004). Therefore declining propensity of higher-order births to low level is considered as a "critical" indicator, marking the advanced stage of fertility transition.

The goal of the study is to gain insight into following questions:

- How progression to first, subsequently, to the second and up to the fourth birth has changed from the 1980s onwards?
- How the trends have been picked up by the main mother tongue groups and different socioeconomic groups?
- How and to what extent change in parity progressions over time and variations between the Turkish and Kurdish speaking women are conditioned by demographic, socioeconomic (structural) and socio-cultural characteristics of women ?

The study aims to investigate trends and differentials in entry into first time motherhood and transition to the second and up to fourth birth, in the context of the economic, cultural and political changes in Turkey. The main parts of the analyses have mainly focused upon two broad phases: 1981-1989 and 1990-2001 considering the post 1980 economic development of the country. The first period characterized by a relatively stable economic growth with implementation of post 1980 neo-liberal economic policies. In the second era, Turkey's macro economy experienced highly volatile growth due to frequent economic recessions. Different sections of the population have been affected by these economic changes -and their social, cultural outcomes- in different ways and at varying paces.

The empirical analysis aims to contribute to a better description and explanation of the fertility developments in Turkey. Here are the some features of the empirical analysis. We take into account the changing duration of birth intervals in progression to the first and second birth orders (what has been termed the *spacing* of childbearing). Nowadays the large family model is on the way to becoming history as more and more women finish their childbearing with the birth of the second child. Our analysis describes which groups of women in Turkey are more prone to be the pioneer of very low fertility behavior or which groups have a higher-order birth and what specific characteristics they possess. The study shows that there are significant

differences in these developments in relation to the mother tongue and level of education of the women in Turkey.

To further develop our theoretical understanding of the fertility developments in Turkey, this study makes use of broad theoretical frameworks of social demography that have been applied to the explanation of demographic changes. These frameworks basically intend to describe and explain reproductive behavior change in relation to modernization process. The first framework considered is demographic transition theory. We also incorporate economic, institutional and cultural, innovation and diffusion approaches to fertility decline, and minority status hypothesis as well. These theoretical models seem to offer plausible explanations applicable to Turkey case with different extents.

As a last introductory remark, we would like to note some features of the data and method we use. Our data stems from '2003 Turkey Demographic and Health Survey (TDHS-2003)', the third survey in a series of three national demographic and health surveys conducted in the last fifteen years. Data analysis is based on recent approaches and methods of causal analysis. We have applied proportional-hazard (or intensity regression) models that belong to a group of event-history models dealing with rates of transition from one social status to another.

I.2. ORGANIZATION OF THE THESIS

In Chapter 2 ("Global Demographic and Fertility Transition") we describe the demographic transition concept and its components namely, epidemiological transition and fertility transition. We also show the main demographic processes since the mid 20th century for the world and the major development groups. This preliminary view to global demographic trends will facilitate to understand demographic changes in Turkey.

The next chapter (Chapter 3) is about to theoretical approaches to fertility transition and differentials. The first approach examined is Demographic Transition Theory (DTT) which intends to describe and explain change in reproductive behavior

in relation to modernization process. The DTT has been frequently addressed by several researchers for examining demographic transition process in Turkey. Besides the DTT, the study has used other broad theoretical frameworks of social demography so as to develop the research questions. For that reason, Chapter 3 describes economic, institutional and cultural, innovation and diffusion approaches to fertility decline and minority status hypothesis.

A brief illustration of demographic and modernization history in Turkey aims to facilitate examination of the recent fertility trends. For this reason, Chapter 4 presents the literature review of the demographic, socioeconomic, cultural and political changes in Turkey until the beginning of 1980s. Chapter, thereby, reviews the onset of nation-wide fertility decline and particularities of the process in Turkey. In this chapter, changes in various economic, social and demographic indicators are presented.

Chapter 5 presents the major economic and social developments in Turkey from the beginning of the 1980s. The background characteristics of the main language groups are given in Chapter 6. These two chapters provide information about social institutional setting that reproduction takes place in Turkey in general and for the Turkish and Kurdish speaking women separately. Chapter 6 also reviews main studies published on fertility level and differences by main language groups since the 1980s up until now.

Chapter 7 gives the discussions on the recent fertility decline process in Turkey and main research questions of the thesis. The research questions are formed as considering the social, economic, and political developments in Turkey from the 1980s onwards and in the view of theoretical frameworks reviewed in the previous chapters.

The next chapter (Chapter 8) includes a thorough description of the methodology, data sets and variables used in the analysis.

Chapter 9 presents results of the descriptive and multivariate analysis on fertility developments of all ever-married women and of the main mother tongue

groups in Turkey. The chapter shows analysis of progressions to first birth and, subsequently, to the second and up to the fourth birth.

The comparisons between the results from each parity transition and the general interpretation in view of our theoretical review are presented in Chapter 10.

II. GLOBAL DEMOGRAPHIC AND FERTILITY TRANSITION

Demographic transition is a term, in general sense, refers to description of a historical trend of vital rates; namely, the shift from high mortality and fertility rates to low rates (Casterline, 2003). As for the most cited description, the vital rates decrease with differential timings; sustained decline in mortality rate followed by some time lag with sustained decline in fertility rate, which leads to population growth in the intervening period. The imprint of the term in social science literature, however, is much broader than being a plain descriptive scheme. The demographic transition term in the literature has additionally been mentioned as title of theories and expressed as a part of several other narrations (Van de Kaa, 1996).

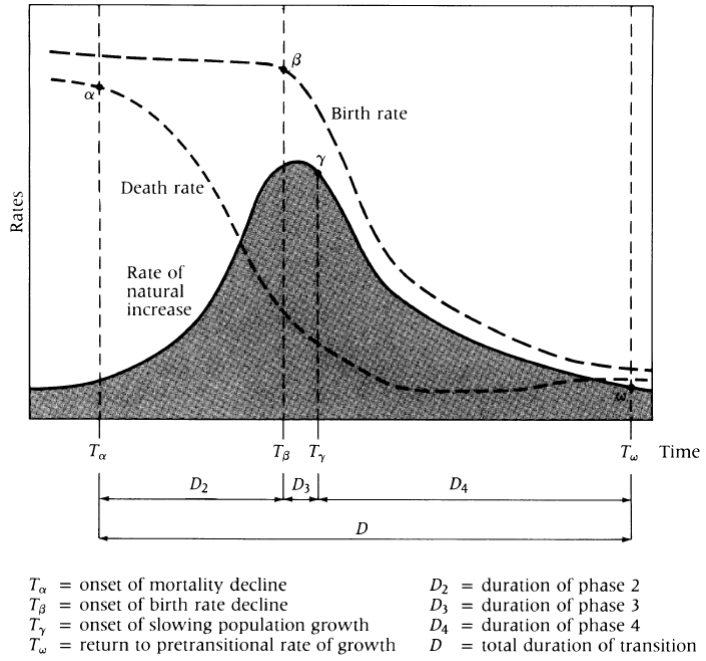
The demographic transition term has been used as connoting diverse meanings and for different purposes since first shown in the literature. While studies on demographic transition was burgeoning in demography literature in 1960s, the term used four different manners: "*a) as a simple historical description of what happened in the past, b) as a classification scheme, c) as a theoretical explanation of the forces impelling demographic changes, d) as a prediction of the sequence through which countries will progress"* (Thomlinson, 1965). In former two usages the demographic transition term exclusively aimed to depict the trend of vital rate changes. For instance, the term illustrates from past to present the trend of vital rates and population growth of real populations. Thereby, it refers quantitative changes in population dynamics. Typically several measures of mortality, fertility and population growth are presented along the line of historical time scale in this type of usage (Coale, 1969; Coleman and Salt, 1992).

In the latter two usages the term additionally embedded in wider modernization/post-modernization theories and indented to be used as an abstract category. In the theoretical frameworks, the term indented to explain reciprocal relationship of population dynamics and population change. Initially in population theory, the demographic transition concept implied an evolutionary process in

which modernizing societies across the world supposed to pursue in the same manner (Notestein, 1946). Thereby the demographic transition concept is defined in association with its seemingly major determinants; modernization, economic growth, secularization/individualization etc. The theoretical formulation classified populations into different stages. For example, for Blacker (1947) a *demographic cycle* (transition) can be denoted by the following subsequently five evolving stages: *high stationary, early expanding, late expanding, low stationary and diminishing*. In the classical demographic transition theory the transition process examined by three phases; namely, *pre-transitional* (high birth and death rates), *transitional* (high birth and low death rates) and *post-transitional* (low birth and death rates) (Thomlinson, 1965; Keyfitz and Flieger, 1971). The pre-transitional stage is characterized by high mortality and fertility rates, almost canceling out each other, and resulting slow population growth. In the transitional stage mortality begins falling while fertility remains high, or may even rise in some cases. This stage is characterized by high population growth because in most cases the fertility begins to decline with a time lag. The post-transitional stage exhibits low levels of mortality and fertility and little or no population growth. These broad categories usually correspond to different demographic regimes – or subsequent stages –but also intrinsically they sort populations by their social and economic development levels.

In one other type of usage, the deterministic dimensions lost standing and the demographic transition is perceived rather as only a model (Burch, 2003). Especially the well-known diagram of the demographic transition process turned out to be an abstract, a-historic and visual representation of several demographic transitions (see Figure II.1).

Figure II.1. Stages of Demographic Transition



Source: (Chesnais, 1990)

Chesnais (1990, 1992), for example, illustrates the schematic model of the demographic transition process as presented in Figure II.1, which enables to decompose whole process into subsequent phases. In the Figure II.1, T_α and T_ω stand for the starting and end-points of the transition respectively. Several transitional phases can be distinguished by different combinations of mortality, fertility and population growth rates. Chesnais (1990) delaminates five general phases:

1. Phase 1 is pre-transitional stage that finishes at T_α point in time when the transition begins
2. Phase 2 is characterized by declining mortality, high fertility and resulting accelerating population increase. The duration of this stage is equal to $D_2 = T_\beta - T_\alpha$
3. Phase 3 is where the peak population growth occurs. The duration of this stage is equal to $D_3 = T_\gamma - T_\beta$

4. Phase 4 is characterized by faster declining crude birth rate than the crude death rate and resulting is slowing population growth. The duration of this stage is equal to $D_4 = T_\omega - T_\gamma$.
5. Phase 5 is the post-transition stage. The demographic transition is completed stage at T_ω point in time. Accordingly, the total duration of transition is equal to $D = T_\omega - T_\alpha$

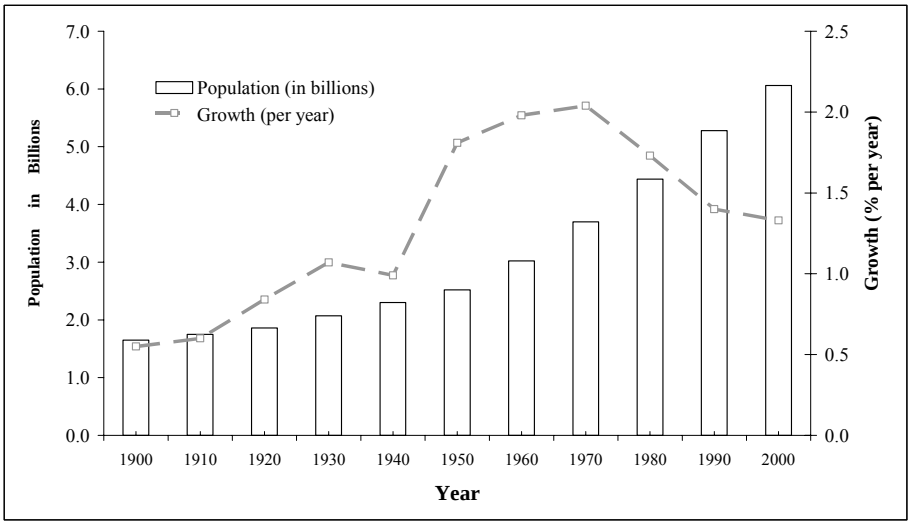
The demographic transition term is designated in the title of 'second demographic transition theory' since 1990 as well. This new, second, type of demographic transition denotes a variety of post-modern value orientations and emerging new life course choices concerning living arrangements and family formation processes in the developed countries (Surkyn and Lesthaeghe, 2004).

The usages of term, as seen above, may causes to conceptual imbroglio time to time unless a brief definition presented when it is mentioned. The word 'transition' may additionally lead ambiguous interpretations since it has double demographic meaning in the demographic literature. In the demographic transition, it refers crucial and irreversible change in the demographic regime of a society. However, 'transition' word also used at the micro level in order to indicate major changes in the life course of individuals; e.g. the transition to adulthood, the transition to parenthood, the transition to third birth etc. In this way, when word 'transition' is used authors feel need to clarify whether it refers a societal-level sift or an individual-or family-level change (Billari, 2005).

The demographic transition concept actually designated to describe and explain of high population growth phenomena that have prevailed in the two centuries over the world. The high population growth trend first began at the beginning of 19th century in northwest Europe with secular decline in mortality rates (Lee, 2003). Enormous growth in numbers has spread all over the world in 20th century and brought about significant changes as restructuring populations. Considering the fact that world's population size increased with minimal rate of growth for thousand years, the unprecedented increase especially during the last

century was an extraordinary phenomenon in the human history. The global population has increased almost four-fold; from 1.6 billion in 1900 to 6.1 billion by 2000 (Figure II.2). The greatest part of this increase took place in the second half of the 20th century; the total world population increased 2.4 times from 1950 to 2000 (Table II.1). Accordingly annual rate of the global population increase reached its peak at 2.04 percent in the years 1965-70. Afterwards, it continually declined and is estimated as 1.35 percent for period 1995-2000.

Figure II.2. Estimates of the world population and growth rate from 1900 to 2000.



Data Source: Hilderink, 2000

The population growth was a global process in 20th century. However, the extent of population increases between the more developed and the less developed regions of the world has been very different (Table II. 1). Especially, since the mid 20th century, the population growth of less developed regions has been outpacing population growth of the more developed regions[1]. This divergence is so

[1] United Nations Population Division (2004a) presents estimates and projections for each country separately. The same figures are presented in terms of the world as whole, its 21 regions and six major areas. Additionally, countries are organized by level of development as *more developed regions*, *less developed regions* and the group of *the least developed countries*. The more developed and less developed regions are mutually exclusive set of countries that together constitute the whole world.

considerable that today whereas 95 per cent of population growth is absorbed by the developing world and 5 per cent by the developed world (UN Population Division, 2004a).

Table II.1. Population of the world by major development group and major area: 1900- 2005

Region	1900		1950		1975		2005	
	Million	%	Million	%	Million	%	Million	%
World	1.650	100	2.519	100	4.074	100	6.465	100
More developed	539	33	813	32	1.047	26	1.211	19
Europe	408	25	547	22	676	17	728	11
North America	82	5	172	7	243	6	331	5
Japan, Australia & New Zealand	49	3	97	4	128	3	152	2
Less developed	1.111	67	1.706	68	3.027	74	5.253	81
Africa	133	8	221	9	416	10	906	14
Asia & Oceania	904	55	1.315	52	2289	56	3786	59
Latin America & Caribbean	74	4	167	7	322	8	561	9

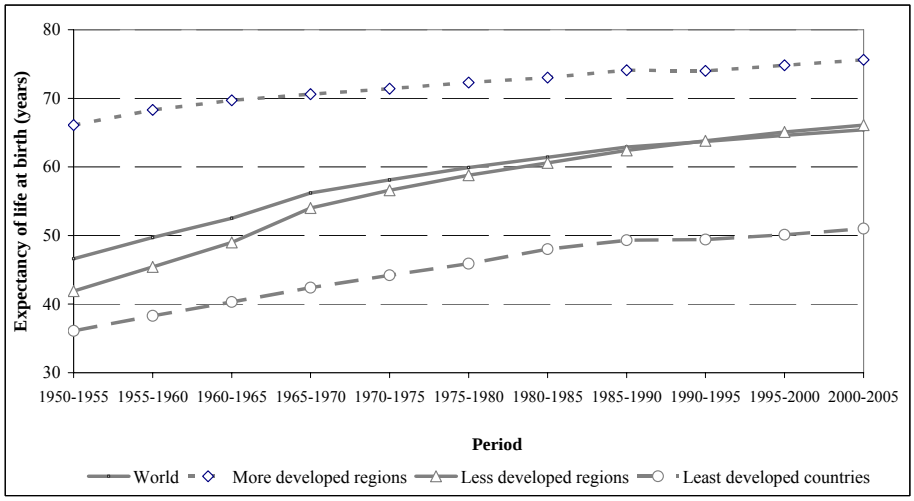
Source: UN Population Division, 2004a; Population Reference Bureau Staff, 2004

In fact, the aforementioned differential population growth is basically an outcome of the divergent demographic transition trajectories between the more developed and less developed regions of the world. These divergent transition paths of the major development groups are product of their past mortality and fertility developments.

In order to illustrate mortality and fertility trends we need to employ indicators that should take into account the effects of specific age structures. These measures could be life expectancy for the mortality and total fertility rate for the fertility. These two indicators are conventionally used to describe two components of the demographic transition; namely, *epidemiological transition* and *fertility transition*.

The more developed regions include all countries in Europe and Northern America plus Australia, New Zealand and Japan. The less developed regions include all other countries.

Figure II.3. Expectation of life at birth for the world and major development groups: 1950-2005



Source: UN Population Division, 2004a

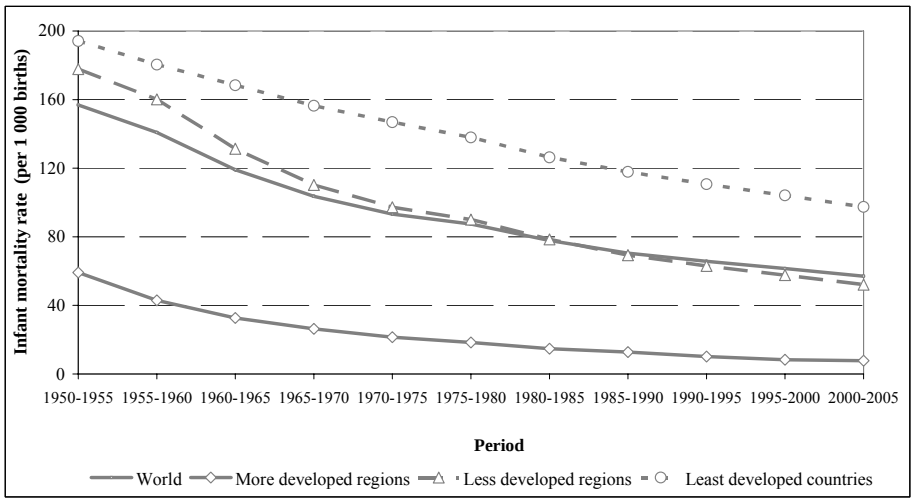
Figure II.3 presents trend in life expectancy at birth in the world and by different major development groups. Apart from the more developed regions, the life expectancy was at quite low level in the world at the beginning of 1950s; 42 years for the less developed regions and 36 years for the least developed countries. Throughout the period due to sustained decrease in mortality levels these two groups of regions and countries have had considerable gains in expectation of life at birth. Nevertheless, the extent of improvement in the less developed regions has been much higher than in the least developed countries. In fact, the difference in the life expectancy between these two groups has strikingly widened in time. Life expectancy at birth has reached 66 years for the less developed regions and 51 years in the least developed countries at the year 2005.

The considerable increase in the life expectation at birth is actually an outcome of epidemiological transition that one of the factors driving the demographic transition. The epidemiological transition term addresses changes in the disease patterns, mortality patterns and conditions associated with these changes (Hilderink, 2000). Several causes, like elimination of infectious diseases,

improved conditions of sanitation, food provision, health services, modern means of communication and transportation, account for the decreasing morbidity and increasing survival in early stages of the epidemiological transition. The advancement of these basic health conditions and services initially reduce infant/child mortality and maternal deaths which brings about the substantial increase in overall expectation of life at birth. As seen in the Figure II.4, during the last five decades the infant mortality rate (IMR), respectively in the less developed regions and the least developed countries, has dropped from 180 and 200 per 1 000 births to 52 and 97 per 1 000 births level. A serious threat that became notable at the end of 20th century which may delay the epidemiological transition in some of the less and the least advanced countries is spread of HIV/AIDS epidemic (United Nations, Population Division, 2003). The prolonged negative impact of the HIV/AIDS epidemic has already left its imprints on the demographic trajectories of 53 countries totally all over the world. 38 of these countries are in Saharan Africa where early phase of the demographic transition is underway.

During advance stages of the epidemiological transition, the fast gains in life expectancy slow down because suppressing the deaths associated with chronic diseases is relatively difficult. There are different postulations on the future course of mortality in the post-transitional societies. According to one school of thought there is an absolute maximum limit of human longevity. Another school of thought claims that the human longevity is subject to change and that the expectation of life can raise much further (Oeppen and Vaupel, 2002). In fact, the life expectancy at birth has still been increasing in the more developed regions of the world though relatively slower pace than in other parts of the world.

Figure II.4. Infant Mortality Rate (IMR) per 1 000 births for the world and major development groups: 1950-2005



Source: UN Population Division, 2004

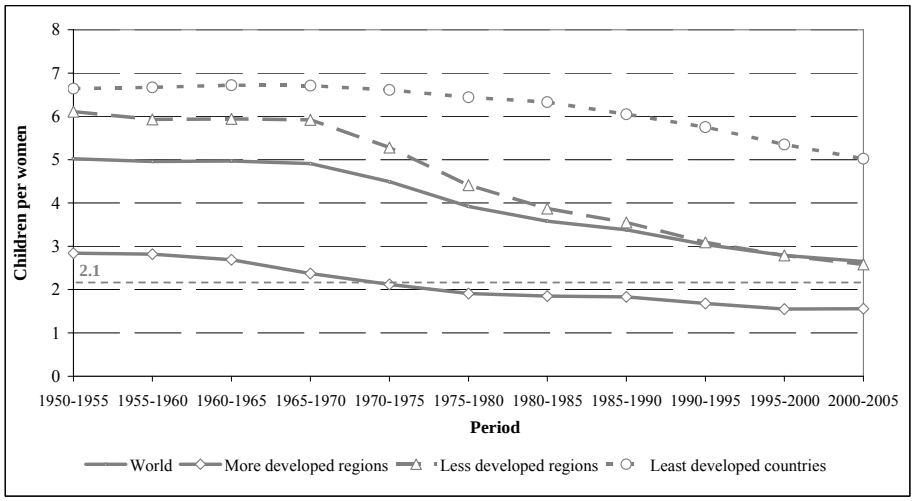
The fertility transition, as a part of the demographic transition, denotes for sustained decline of fertility level from high to low level. That is to say, it refers to reproductive behavior change within which natural fertility behavior shifts to modern family limitation (Van de Walle; 2003). The natural fertility concept, introduced by Henry (1961), denotes to the reproductive behavior characterized by the absence of deliberate birth control. In other words, pre-transitional populations, characterized by natural fertility, the large majority of couples do not consciously practice birth control to limit the number of children they have[2]. The level of natural fertility nevertheless expected to differ in different populations due to differences in the extent and duration of breastfeeding, different customs governing abstinence, differences in the average frequency of intercourse and differences in health conditions. The modern family limitation, on the other hand, arises from the modification of reproductive behavior in a way that fertility behavior turns into a matter of the calculus choice (Coale, 1973). During the

[2] There are some criticisms directed to the natural fertility concept; as for the concept formed by using indirect measurement methods and as for it ignored the birth-spacing practice in pre-transitional populations. However the latter critic, presence of the birth control practice as a method of ensuring families or communities to limite their size in traditional societies has not been widely acknowledged (Bongaarts and Watkins, 1996; Caldwell and Caldwell, 1997)

course of fertility transition, the fertility behavior of couples increasingly bound to the number of children already born, called as parity-specific birth limitation. At the initial stage of the fertility transition increasing age at marriage may mark changing reproductive behavior. As the fertility transition gains momentum, voluntary birth control diffuses among couples that show tendency to avoid having children in excess of the number the couple desires (Coale, 1969).

The decrease of the total fertility rate (TFR) along a time scale is the most commonly used indicator that presents the general course of the fertility transition descriptively. The onset of fertility transition, starting point of the sustained secular fertility decline, marks a sharp and irreversible departure in reproductive behavior (Bongaarts and Watkins, 1996). Thus, from the theoretical point of view it is important to identify what kind of social, economic and political changes coincides or predates the onset of the fertility. There is no predetermined common fertility level at the advent of the fertility transition since the natural fertility level could change from one population to another. In order to consider the fertility transition is underway, one commonly used measure was devised from famous Princeton European Fertility project. The point at which 10 percent or more decline attained from a peak of plateau of fertility level acknowledged as the onset of transition (Caldwell, 1997; Casterline, 2001a). According to this approach, if the fertility level at 1950-1955 is taken as reference, the fertility transition initiated in 1970-1975 period in the less developed regions and in 1990-1995 period in the least developed countries (estimation based on the values of Figure II.5).

Figure II.5. Total Fertility Rate (TFR) for the world and major development groups, estimates and medium variant: 1950-2005



Source: UN Population Division, 2004a

The populations are categorized for their stage in the fertility transition. The TFR measure usually used to categorize countries into diverse stages of the fertility transition. For example, United Nations Population Division (2004b) delaminates three broad classes; 1. *High- fertility* countries had no fertility reduction or only had an incipient[3] decline, 2. *Medium-fertility* (or *intermediate-fertility*) countries whose fertility has been declining but the TFR level is still above 2.1. The medium-fertility countries are classified into three subgroups too; as for TFR ranges from 4 to 5, TFR ranges from 3 to 4 and TFR ranges from 2.1 to 3 children per woman. *Low-fertility* countries are whose TFR at or below 2.1 children per woman (or replacement level[4]). As seen in Figure II.6, although the fertility transition has underway for nearly a decade, overall the least developed countries are still characterized by high-fertility at the beginning of the 2000s. The

[3] The fertility decline initiated but TFR is still more than five children per women. (United Nations Population Division, 2004b)

[4] Replacement level fertility is the level that needs to be sustained over the long run to ensure that a population replaces itself. For most countries this level is close to 2.1 children per woman (UN Population Division, 2004b). Nevertheless due to cross-country differences in mortality, the variance in the replacement level fertility is actually substantial; ranging by almost 1.4 to 3.5 children per woman (Espenshade et al. 2003).

average TFR of the less developed region is 2.6 children per women at the year 2005. Thus, they are, in general, characterized by medium-fertility level.

The classical demographic transition theory assumed that the replacement level fertility –approximately when the TFR declineds to 2.1 children per woman – marks the end of the transitions. Essentially, this presumption is based on the homeostatic[5] argument of the demographic transition theory (Westoff, 1991). However, the TFR level has been under 2.1 children per women in the more developed regions since 1970-1975 period onwards. For that reason, new fertility category definitions has emerged in the demography literature for these populations; namely are *very low* fertility, as for TFR below 1.5 children per woman, and *lowest-low* fertility, as for TFR below 1.3 children per woman (Billari, 2005).

This unprecedented very low and lowest-low fertility levels in the developed countries has shown that actually it is difficult define a point demarcating the end of the secular fertility transition (Demeny, 1997). In other words, the analysis of past fertility trends in countries that have already completed the demographic transition, the more developed countries in other words, does not suggest any obvious future trend about end of the fertility transition. Similar opinion is acknowledged by United Nations Population Division[6] (2006) too: "*Despite the theoretical attractiveness of replacement level fertility, actual populations do not have replacement as an in-built goal, and long-term deviations from replacement level may turn out to be the rule than the exception, especially if they remain within a narrow range of actual replacement level*" (United Nations, Population Division, 2006).

[5] Homeostatic argument claims presence of a 'demographic system' that aims to preserve its self-maintenance and survival. The changing fertility levels are accepted as an outcome of self-regulating system rather than being the sum of individual behavior. Thereby, this view asserts that an initial equilibrium between high vital rates at the beginning will be reestablished at low levels at the end of the demographic transition.

[6] United Nations Populations Division adhered the assumption that the demographic transition would finish as producing a stable state in which fertility remained constant at replacement level (Demeny, 1997; United Nations Population Division, 2006). The 2002 Revision of World Population Prospects however stipulates that under the medium variant fertility decline assumption the fertility in the intermediate-fertility countries will decline to 1.85 children per woman by mid 21st century. Similarly, fertility in low-fertility countries is also assumed to remain below 2.1 per woman during the first half of 21st century (United Nations Population Division, 2003).

Elaboration of the life expectancy at birth and the TFR trend in the "less developed regions" and the "least developed" countries confirms that the global demographic transition in the majority of developing countries is reaching or has reached its zenith nowadays. The epidemiologic transition and the fertility transition in major parts of the world have already undergone substantially. Nonetheless, the least developed countries are still experiencing the early phases of these transitions. The life expectancy has considerably increased in these countries yet the fertility decline has just initiated. Thus, their populations are expose to expand that typically occurs in the transitional phase.

Nevertheless, we should also consider the fact that the demographic situation in most of the developing region shows a large variation. Between 1970 and 2000, the world population experienced a major and unprecedented reduction of fertility levels, driven mostly by the decline in fertility in developing countries. While fertility is uniformly high in developing countries in the 1970s, the fertility levels of developing countries vary over a wide range. The average figures presented above masks the remarkable demographic heterogeneity among the developing countries. Since the beginning of 2000s, in 20 developing countries, fertility has been below replacement level (United Nations Population Division, 2004b). Moreover, sub-national differences between subpopulations distinguished according to economic, social or residential characteristics can also be very large. In contrast, the demographic situation in most of the more developed countries much resembles each other. Majority of these populations has completed the demographic transition in 1970s. While the large differences in the moment of onset of the fertility decline, the contemporary fertility differentials are not very significant among them. However, among the more developed countries, certain group of countries has experienced increasing mortality in the past decades, likewise East Europe and Russia, thereby exhibiting relatively low level of life expectancy at birth (United Nations Population Division, 2003).

The latest *World Fertility Report 2003,* prepared by United Nations Population Division (2004b), presents a compilation of key findings about the global fertility transition that took place between 1970s and at the beginning of the

2000s. The report briefly conclude that the fertility transition has occurring since 1970s have been made possible by major behavioral changes pertaining to union formation, marriage and use of contraception. In this respect, the following findings are distinguished:

1. A major worldwide shift in the timing of marriage to older ages has occurred. For developing countries, the increase has been more striking with median age at marriage rising from 25.2 to 28.8 years for men and from 22.0 to 26.1 for women.
2. Both men and women are spending longer periods of their life being single. The median of the percentage ever-married among persons aged 25-29 declined from 85 per cent in the 1970s to 76 per cent in the 1990s for women and from 68 per cent to 56 per cent for men in the world.
3. Although divorce rates have increased in most countries with data available, marriage or some form of consensual union continuous to be nearly universal.
4. A tremendous increase has taken place in the use of family planning and modern contraceptive methods especially in developing countries. For developing countries the median level of contraceptive use among currently-married women rose from 27 per cent to 40 per cent between 1970 and 2000.
5. Level of childlessness vary considerably among major areas

The primary debates over the demographic and fertility transition and its outcome are seen will still constitute to be dominant issues in future (Vallin, 2002). The reasons of this maintaining concern are several but two major demographic preoccupations can be described here. Firstly, due to ‘population

momentum[7]' effect, the populations of the regions, where fertility has been decreasing level of 2.1 per woman (or 'reproduction level') will still expose to population growth. The sustained population growth comes not only from the current age structure but also time it takes for fertility rates to fall replacement level (Goldstein, 2002). Thus, the future population size of the transition countries will be determined by their prevalent speed of fertility decline. Although demographic transition is accompanied by development and economic growth to certain extent, some of those countries completing the transition are still suffering from high social, economic and political unrest. Since ongoing demographic transition determines the future population size, the theme will preserve to be a significant subject.

Secondly, as important change in total population size, the demographic transition patterns are bringing about different age structures for the societies (Chesnais, 1990; Casterline, 2001a). During the advance phases of the demographic transition – when fertility substantially decreases to low level – the change in the age structure come into view. Thereby, population aging initially emerges 'from below' since proportion of children and youth are diminishing (Vallin, 2002). Drop in the proportion of young population could be beneficial to economy; more favorable age structure could alleviate the pressure of high dependency rate that decreases saving rates and hindering economic growth. Additionally, fast fertility transition would have a positive impact on income distribution gap as reducing the size of economically deprived families. This favorable age structure is called as "demographic gift" or "window of opportunity" (Casterline 2001a). When the effect of mortality decline reflected its influence older ages the number and share of elderly in the population increase that cause aging 'from above' (Vallin, 2002). Most of the developing countries are experiencing demographic transition process within much shorter duration than the

[7] Populations that have experienced rapid population growth and high fertility in the past are tend to have large and increasing cohort of potential parents. Even the fertility level declines among these potential parents compare to their forebears, even if they decide on fertility levels that are insufficient for generational replacement- the sheer size of such parental cohort can bring about continued positive population growth. Low fertility level may need to be sustained for a considerable period of time before any reductions in population become evident (United Nations Population Division, 2004a)

developed countries had experienced in the past. Thus these countries may also expose to fast ‘aging’ process too. Therefore, the pace of the demographic transition, or, progressively more emphasized, pace of fertility transition, is a matter of concern for the developing countries due to concerns pertaining to changing age structures.

The end of the demographic transition equated with the moment when the population growth rate becomes essentially zero, which allows population stabilization. However, although he did not propose any alternative theory or paradigm Vallin (2002) stated that under the current demographic developments, expectation of eventual population stabilization is also a highly uncertain assumption. The source of his doubt has two folds related to possible future course of the fertility and mortality trends. The fertility course of fertility decline has shown fluctuations so far; like ‘baby boom ‘ after the World War II in the developed countries or stalling fertility decline in some developing countries (Bongaarts, 2006). To achieve an eventual stable age distribution is then might be very difficult due to uncertainties about the future developments. Therefore, stable relationship between postulate between mortality and fertility at the end of demographic transition and eventual population stabilization assumption are still under scrutiny today.

III. THEORETICAL APPROACHES TO FERTILITY TRANSITION AND DIFFERENTIALS

III.1. DEMOGRAPHIC TRANSITION THEORY

Demographic Transition Theory (DTT) is a scientific endeavor in social sciences, particularly in social demography, intends to describe and explain reproductive behavior change, in relation to modernization process, that has taken place across the globe. The theory tries to explain how demographic dynamics of human populations, namely mortality and fertility, has shifted from higher to lower levels in different societies, within different time spans. The initial explanation to this phenomenon, known as classic version of DTT, has become the leading body of thought and research guide for a long time although it has been subjected to severe criticisms and revisions. One particular difficulty about the theory is that arguments and theory were constituted by several authors and the discussions have not focused upon entirely on one text (Chesnais, 1992). The theory has remained popular in the social science literature, despite its shortcomings, presumably because from the beginning it has had a well-defined story structure (Van de Kaa, 1996). Attempts to strengthen the theory have been more frequently appeared than the attempts to replace it with a totally new one (Nam and Philliber, 1984). In fact, DTT brought about theoretical underpinning for many explanations for past population changes and essentially it was a plausible description of complex social and economic phenomena, took place in 19th-century Europe (Teitelbaum 1975).

The perspectives on population in the history have been influenced by several societal conditions. The social transitions that brought the Renaissance, the industrialization and new governmental forms created modern circumstances which caused many authors to view population issues in different terms than formerly (Nam and Philliber, 1984). Population theory, prior to idea of the demographic transition in the 19th century formed its arguments in close

connection to political economy discipline. Amongst these authors, influence of Thomas Robert Malthus (1766-1934) with 'principles of population', of John Stuart Mill (1806-1873) with 'utilitarianism' which underlined the reasoning of the classical economists and of Knut Wicksell (1858-1926) with 'optimum population theory' are discernible for determining the general framework of the discussions (Overbeek, 1977).

Considerations about increase and decrease in the population size - pessimism versus optimism - have always made an impact on the formulation of the population theory. Those who acknowledged the pessimist view progressively tried to clarify negative effects of the population increase. In this manner, during the first half of the 19th century, especially from J. S. Mill onwards, the population discussions were highly subordinated to 'laws of diminishing returns'. Classical economy school writers gave special emphasis on the cost of production (supply) as the main determinant of value. Accordingly, any increase in the population and labor force was seen as a cause to decrease per capita output, particularly in agricultural production. Nevertheless, the agricultural development in North America and rapid capital accumulation in European economies undermined the pessimist outlook. At the beginning of 20th century, economic understanding began to explain value by emphasizing the demand factor, or utility received by the consumer. As a result, 'the principle of diminishing return' view was replaced by 'the principle of diminishing utility' that determined the current economic reasoning. Population increase *per se* was not regarded as detrimental as before to the economy.

At the beginning of 20th century, the population theory, apart from political and economic perspective, was gaining more distinguished scientific orientation. The new ideas came into view gradually as study of population loosened its close identification with the discipline of political economy and Malthusian population theory. During the 19th century, especially in the second half, both mortality and fertility rates reduced dramatically in west Europe and United States. Accordingly the number of studies, investigating modern population dynamics, boosted in the

social science literature. Theoretical frameworks that focused on population size began to incorporate fertility and mortality trends. The studies on the determinants and consequences of the population change began to employ macro-level frameworks, demographic change models. The demographic analysis, differently than predecessor that had viewed population change as a unitary phenomenon, directed to analyze the population change as examining several demographic processes simultaneously. In the new paradigm, the population change disaggregated into its components namely it was conceptualized as the net result of demographic forces; mortality, fertility and migration. The modeling process, afterwards, extended to include environmental, social, economic, political and biological factors that form the demographic forces in complex and various manners. The theory of demographic transition can be seen as an outcome of this perspective that has been constructed by the culmination of a continuing scientific endeavor process.

III.1.a. Early literature: the idea of 'demographic transition'

The arguments of the demographic transition were actually developed by different authors at the end of 19th and beginning of 20th century[1]. For example, at end of 19th century, an American physician, John S. Billings having illustrated quantitatively the fertility trend in some industrialized countries between 1875 and 1890, proposed some ideas on the association between modernization and fertility decline; like urbanization, increase of wealth, effort to maintain social position, desire to upward social mobility of lower-middle class people and emancipation of women (Billings, 1976). Likewise, Willcox (1915 and 1985/1906), the American statistician and demographer, presented the association between modernization and mortality decline He underlined mortality decrease as a prime cause of population

[1] It is difficult to give comprehensive list of the predecessor authors of the demographic transition. The idea evolved in a process culmination of the scientific endeavors. In order to see list of contributors see; Hodgson (1983), 'introduction' of Chesnais (1992) and 'notes' of Szeter (1993)

increase in the world (Willcox, 1915; 1985/1906). He indicated the byproducts of industrialization process; such as, the increase in productivity and scientific knowledge, technological improvements, political stability etc., as the principal factors of the modern population increase.

Another important development came into sight by the advancement of formal demography techniques. For instance, the formulation of the Net Reproduction Rate index[2] in which combined effect of the fertility and mortality in a population is illustrated, lead an important cause of the changing attitude toward population studies (Carr-Saunders, 1964/1936; McCleary, 1937).

Therefore, the two main arguments of the demographic transition had already been outlined in several studies before the 1930s. These two main arguments can be briefly given as follows: first, with respect to industrialization high vital rates shifts to low ones, and second, mortality responds modernization process more rapidly thus it declines earlier than fertility. The time lag between mortality and fertility decline produce population growth (Hodgson, 1983).

The first appearance of the demographic transition concept was as a classification model in which human populations differentiated each other by different combinations of mortality and fertility trends. This schematic classification of populations was published independently by two leading demographers Warren S. Thompson in United States and Adolphe Landry in France at the beginning of 1930s (Kirk, 1996; Vallin, 2002). A. M. Carr-Saunders was another predecessor of the theory though he did not devise an exact general schema of the transition (Chesnais, 1992; Kirk, 1996). However, Thompson's formulations of the link between population and economic growth level and his worries about population expansion did not find significant number of audience among social scientists at the beginning. The idea of demographic transition was not accepted with strong social science and policy interest in the 1930s presumably because eugenics-inspired dominance of studies in the field (Szreter, 1993; Kirk, 1996). A decade later, extensive biologist perspective had lost its importance in

[2] Introduced by Robert Kuczynski –usually cited as Dr. R.R. Kuczynski

social sciences. Keynesian and neoclassical economics perspective were spreading and dominating scientific studies during 1940's (Overbeek, 1977). Ideological shift in social studies brought about concerns of the ongoing demographic change's economic implications, particularly of the developing countries.

Having concerns about potential outcomes of the demographic transitions, in other words high population growth prospect, became the most pervasive topic among demographers, particularly in USA, in the mid 1940. In fact, as early as 1930s, a fast rate of world population growth, or that of less affluent countries, was seen a plausible future demographic development on account of diffusing medical and sanitary progress (Thompson, 1929; Carr-Saunders, 1964/1936). Thompson indeed saw the prospect of forthcoming population growth as "*the crudest form of the most urgent population problem of the near future*" (Thompson, 1929). The main body of the demographic transition theory actually developed by a group of social scientists who were producing strategic population projections for US State Department at Office of Population Research in Princeton University during 1940s and 1950s, primarily under auspice of Frank W. Notestein (Szreter 1993, 2000; Kirk, 1996; Van de Kaa, 1996).

Thompson and Laundry are accepted as the pioneers of the demographic transition idea, for their schematic classifications and emphasis on the transitional stages of the population change. Thompson (1929) stated in his famous article 'Population', turned out a 'classic[3]' in demography literature, that the countries could be categorized into three different types according to population growth patterns. The first group of countries (Group A) was characterized by very rapidly declining birth rate and slow declining or stagnant death rate. Since the birth rate more rapidly declining then the death rate, the rate of natural increase was also declining in these countries. The population of Group A countries was including west Europe, north of Italy and Spain and countries largely settled by people emigrated from the Europe. The size of population was expanding until latter part of nineteenth century and in the early years of 20th century in the Group A

[3] "granddaddy" of fertility transition theories (Mason, 1997)

countries. Accordingly, for Thompson (1929), these countries had completed a transition: "*they have passed from state of having very high rate of natural increase into the state where they have quite low rates of increase and will shortly become stationary and start to decline in numbers*".

On the other hand, Thompson (1929) was unsure and unclear what was acting to reduce birth rate in the industrial communities; he simply mentioned postponement of marriage, birth control and some attributes of social organization without providing any causal explanation.

Second group of countries (Group B) was characterized by declining both the birth and death rates. However, differently than in the Group A, the death rate declining more rapidly than the birth rate and the discrepancy between the former and latter was maintaining a high rate of natural increase. For this reason, the Group B countries were in zenith of their population expansion. The population of Group B countries was including Italy, Spain and central European countries. Thompson (1929) saw demographic conditions in the Group B countries very much resemble to conditions that of the Group A countries had half century ago. He anticipated that the birth rate would decline in the Group B countries faster than it happened in the Group A countries due to more advanced communication facilities in the 20th century. In other words, the spread of contraceptive knowledge was easier than it had been in the past. Likewise, he stated that, the pace of transition in Group B countries was related to two major social transformations in these populations: spread of urbanization and industrialization.

Third group of countries (Group C) was characterized by the "*relative lack of voluntary control of the births and deaths*". Thus, the growth of population was primarily determining by positive checks – like, hunger, disease and war - defined by Malthus[4] previously in the population theory. The Group C countries were

[4] Malthus believed that population increase was constant process *per se*. It may surpass the food supply of world unless it is checked by some means. There two constantly operating mechanisms in every society that keeps population explosion under control: preventive and positive checks. The preventive checks; like delay of marriage and birth control arising from rationality of human being. The positive checks; like extreme poverty, bad nursing of children, diseases and epidemics, wars,

comprised 75 percent of world population, including most of the population of Asia, Africa and South America. Thompson (1929) foresighted that "*a very rapid increase*" in some of these countries could be happen due to "*developing industry and sanitation*" and "*expanding modernization*". These social changes were releasing positive checks that shorten normal duration of human life span on the population growth.

Thompson (1929) lastly worried probable harsh struggles between the prosperous Group A countries one hand, the Group B and C countries, who were suffering from territorial and prosperity shortages, on the other hand. Therefore, differential population trends among these groups and end of demographic transition could bring about some concerns rather than relief.

Adolphe Landry, French economist, demographer and statesman, was the second prominent figure of the early formulation of the demographic transition idea (Landry, 1987/1933; Chesnais, 1992, 2003; Szeter, 2000; Kirk, 1996). Landry, studied on the secular changes from a high fertility and mortality regime to a low fertility and mortality regime and he labeled the phenomenon as 'demographic revolution'. In the two important publications, appeared in 1933 and 1934 subsequently with the same title; 'La Révolution démographique[5]' –the Demographic Revolution, he described the demographic transition as a three phases process (Chesnais, 2003).

The three stages were standing for the three different demographic patterns; namely, '*primitive*', '*intermediate*' and '*contemporary*'. In the primitive demographic pattern, fertility was reaching its potential maximum since direct and indirect economic concerns, limiting fertility level, was absent. Population was in a tendency to constant increase. Nevertheless, raising mortality was eliminating growth of the population by means of Malthusian positive checks. The tendency of

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famine etc., arising from "*vice or misery*" of social life or destructive effects of environment. These two checks, for Malthus, was inversely related each other (Overbeek, 1977).

[5] Demographic revolution did not come up abruptly; its was an "*inconspicuous and relatively slow"* progress. But since there was critical demographic regime change occurred, "*limited procreation replaced unlimited*", the change was revolutionary in nature said Laundry (cited in Chesnais, 1992).

equilibrium, established by the fertility and mortality relationship, was disturbed by two factors that providing the transition from one pattern to another. As it is the case in the Thomson's formulation, Landry mentioned as first the medical progress factor and secondly increasing productivity factor in the economies. In this respect, the case of England, where fast economic development along with swift population increase occurred during the first three quarters of the 19th century, was a clear example of this sort of transition.

In the second pattern, *intermediate* one; the immediate regulator of the population increase was turned from Malthusian positive checks to preventive ones. Changes in nuptiality behavior, higher proportion of celibacy or higher ages at marriage in the societies, were lowering the fertility level. Behind this new tendency was lying emerging economic calculus of individuals. That is to say strive of the individuals for maintaining their accustomed standard of living.

These two demographic patterns were in the state of equilibriums. In the former one, the equilibrium was regulated automatically by the interrelationship of the high fertility and mortality. In the latter one, certain human strategies were involving to maintain equilibrium. In contrast to these former stages, the next was exhibiting a radical break from the past: no longer was the equilibrium prevailing in the third demographic pattern.

Landry presented the third demographic pattern, *contemporary* one, as a revolution in reproductive behavior since the fertility level was decreasing under the replacement level. Landry gave the demographic trend of France and Sweden, at the beginning of 1930s, as an example of the third pattern. There were two main characteristics of the third pattern: a widespread tendency of people to reach a higher standard of living and generalized practice of birth control within marriages. Therefore, the fertility factor, instead of mortality, was the primary determinant of the population change in the contemporary demographic pattern.

Another author who contributed the early version of demographic transition idea, during the first quarter of the 20th century, was A. M. Carr-Saunders

(Chesnais, 1992; Kirk, 1996). Carr-Saunders did not construct transitional categories as precisely as in the studies of Thompson and Landry. Nonetheless, he elaborated on the causes of population changes throughout the world in relation to changes in mortality and fertility levels. However, insufficient data sources of his time confined most of his analysis to European countries or some particular countries in Asia.

He examined the population trend of England, from 1840s to 1910, and concluded that the real cause of the population explosion was the decline in the death rate during the period. Like Landry introduced 'demographic revolution' idea, he was seeing modern demographic changes as a revolutionary sort of transformation, which aroused from "*…the sudden application of new skilled processes to industry, and other unusually favorable circumstances…"* (Carr-Saunders, 1925). Carr-Saunders published his book *World Population: Past Growths and Present Trends* in 1936 (Carr-Saunders, 1964/1936). The classification of the demographic stages was less specific compare to definitions of Thompson and Laundry. The demographic condition of Europe was introduced as an 'ultimate stage' that all others countries had expected to approach in time:

> "*If this is so, and if we range these countries according to their approach to European conditions, we must place China at the bottom of the list with India next and Japan at the top. Japan takes this position because both birth and death-rates are now declining for the same reasons that they are declining in Europe, namely birth-control and sanitary improvement. Between them come other countries. Since it would seem that in Ceylon, Formosa and Algeria the death-rate is declining, we may place these countries above the remainder which continue to show steady birth and death-rates"*

He asserted that contact with Europeans decreased the death rates, brought about population increase in some of the developing countries[6]; like, India, Java, Japan and Egypt. He foresighted that European sanitation and medicine would spread wider in the underdeveloped areas of the world and the extension could lead to increase the world population size, as Thompson also wrote.

The connection of the different demographic regimes in a sequential passage is a critical argument of the demographic transition idea, as seen in the studies of the abovementioned authors. Their formulation of hypothetical transition from one demographic regime to another implies that the authors invoked a kind of 'Social Darwinist' transition paradigm in their elaborations. The Social Darwinism was a well-established prevailing model of the social changes of mid 19th century and onwards that left its imprints on several subjects of the social science, including ethics, metaphysics, religion, politics, rhetoric, biology and psychology (Browne, 1982).

Social Darwinist formulization of the social changes starts from a 'reality' of existing social relationships and arguing back to their earlier forms by means of a 'natural' causation process. The formulization process is synthetic; accumulated data, or results, of the different disciplines were used to drive the basic principles, or laws, or forces of the investigated phenomenon. The ideological description of present reality and the abstractness of so-called 'natural' causation process in their explanations are important predicaments for the Social Darwinist perspective. For this standpoint, all phenomena could be explained in terms of a lengthy process of evolution in things. In other words, a sort of natural selection in society was determining a chain development; from primitive to the most advanced one. Likewise, societies were seen in evolutionary progress like the biological organisms develop from simple to more complex and heterogeneous forms.

[6] The same argument extensively depicted in Willcox's studies (Willcox, 1985/1906; 1915). The European 'civilization' effect on the rest of world population, or on Group C countries of Thompson, was turned out an important element of the demographic transition theory that appeared in mid 1940s.

Furedi (1997) claims that during the 19th century, especially the concern with differential fertility was highly bound up with Social Darwinist understandings in the population debate. Szeter (1993) considers classical version of the transition theory, highly inspired from the demographic transition idea, as "…*unabashedly evolutionary and recapitulationist general theory…*". This was not peculiar to demographic studies. Indeed, until 1930s, Social Darwinist ideas of Herbert Spencer were in the eclipse of intellectual world in general, as well as in sociology (Ritzer, 1988).

In fact, the effect of Social Darwinism on the early authors of the demographic transition can be seen in both the language and perspective. Landry categorized demographic regimes, and by doing so also societies, 'primitive', 'intermediate' and 'contemporary'. One of the books of Carr-Saunders (1922) directly titled with an evolutionary rhetoric: 'The Population Problem a Study in Human Evolution'. Elsewhere, he used evolutionary language in great extent as well (Carr-Saunders, 1964/1936). Thereby, he considered prevalent population situation as a consequence of the whole story of social evolution.

The perspective we briefly described here left its imprints on the transition notion of the demographic transition idea. According to demographic transition idea authors, all societies were moving from a pre- to post-industrial social structure on a linear line so did their demographic regimes. Meanwhile the heterogeneity among the so-called 'primitive' pre-industrial or modern demographic regimes was ignored. The final stage of this transition –or evolution- process was supposed to be represented by west Europe populations. Much of the statistics and empirical analysis of the transition process was relying upon the data pertaining to northwest Europe countries. This was a kind of necessity considering the fact that the major effort to conduct research and improve demographic knowledge for developing world only came up after mid 1960s (Van De Kaa, 1996).

The essential quality of the demographic transition paradigm; the social evolutionary notion of change and the 'Eurocentric' outlook, was transferred into its successor theory, in which a 'development' language masked the evolutionary

rhetoric. It seems that the fundamental reason why the theory version has been subjected to voluminous critics so far lies in the problems since the very beginning of the demographic transition idea. Why the idea of demographic transition then determined the direction of latter discussions and developments of the population theory is an intriguing question.

Before the demographic transition idea, the general understanding in the population discussion was also focusing on the linkage between economic and social conditions and population increase. Nevertheless, increase in production capacity, mainly in the agricultural production, had been propounded as an essential cause of the population increase phenomenon. For example, in 1916, a 'Commission of Inquiry into the Declining Birth-rate' in Britain was explaining causes of population increase as follows (Commission of Inquiry, 1916):

> *"History indicates that A RAPID INCREASE of population occurs (a) in thinly peopled agricultural lands newly developed, especially when facilitates exist for exporting the produce (Russia, the United States, Canada, the Argentine); (b) in well-developed countries during periods when trade is expanding rapidly, and wealth increasing (England and Germany). In these cases the stimulus of the new prosperity ceased to act upon the birth-rate after a time; (c) the adoption of a new food, like potato in Ireland, sometimes facilitates the growth of population, for a time, to abnormal extend"*

The associations between modernization and population dynamics or the role of vital forces in the population growth process were known but the linkage was loosely elaborated for the absence of an adequate descriptive schema.

The idea of demographic transition, from the writings of aforementioned authors, can be briefly described as follows: in the course of modernization and

industrialization, primarily due to economic development, populations move from high mortality and fertility equilibrium to low mortality and fertility equilibrium. During the transition process, outlined in three subsequent processes, the decline in birth rates lags behind the decline in death rates which leads to population explosion. Thus, the idea of demographic transition, as a new perception of the population change, was significant in demographic theory because it illustrated the immediate effects of modernization on the mortality and fertility rates simultaneously. Secondly, the interplay between mortality and fertility; firmly speaking, the influence of mortality on fertility, was regarded a major component of the population growth. However, the demographic effect of migration, in this model, was almost neglected that turned out one of the criticisms directed to the theory.

III.1.b. Early literature: the seminal ideas on causes of the fertility decline

By the end of the 19th century the delayed and non-universal marriage system was replaced by use of contraception as a means of fertility regulation in west Europe. Thereby, modern fertility decline began in Europe, with exception of countries like Ireland and Albania, before the First World War launched. Not only the social scientists, but also public opinion builders –like church and media- and politicians were well aware of the fertility decline phenomena in west Europe.

Some of the authors of the demographic transition idea, paid great deal of attention to the causes of fertility decline. By doing so, they left vast and, in terms of theme and content, surprisingly 'modern' literature on the issue. Arguments of the major writers of the early 20th century was so lucid and appropriate that they often be resurfaced in the later revisions or restatements of the demographic and or fertility transition theories: For instance, J. C. Caldwell's 'wealth flow theory', arguments of 'innovation and diffusion' or even arguments of the 'second

demographic theory' comes into mind (Chesnais, 1992). What is 'new' in arguments, and theories, since 1970s, may be derived from the fact that empirical evidence, which might have been very difficult to obtain and analyze in the past, can be much more thoroughly examined in our day. In addition, the contemporary authors attempt to invoke concepts of other disciplines in order to build up a more comprehensive theory. In this respect, a brief study on these seminal ideas, pertaining to modernization and fertility decline can be useful to comprehend development of the demographic transition theory.

One of the elaborations, repeatedly has been visited, was developed by the 19th century French writer Arsene Dumont (1841-1902) and known as 'theory of social capillarity' (McCleary, 1937; Hodgson 1983). Dumont argued in this theory essentially that during the course of modernization, individuals' ambition to improve their relative social position was turning out a strong enough motivation to bring about a significant decline in fertility. Modernization, in this argument, equated a situation of increasing social mobility of individuals, which hitherto was an unlikely phenomenon. The modern social situation was the outcome of spread of industrialization, that is to say changing production relationship. Industrialization process progressively eradicated domestic handicrafts and agriculture and by doing so income–earning activities of households lessened gradually. Therefore, family steadily ceased to be an economic unit. Industrialization also increased the division of labor and facilitated individual social mobility options. Meanwhile, due to increasing options and competition, maintaining one's position in society turned out quite difficult and demanding. Particular social and economic events, like wide-scale industrial and agricultural depressions also diffused feelings of insecurity to various segments of society.

Dumont used metaphor of 'social capillarity' for the struggle of security and social promotion pursuits in the industrialized societies (Van De Walle, 2003). According to him, during the course of individualistic competitive struggle, children became increasingly handicap for parents to maintain certain standard of living. In addition to that qualitative requirements in the industrialized societies were much

more important; namely, need for higher standard of education and technical skills in industry, trade and public services. Professional institutions were facilitating the competition as demanding professional training and competence. Material success in life had come to depend increasingly on the sort of education one had. The public school system accordingly, increased facilities for secondary and higher education and for technical training. Thus, apart from parents own 'individual idealism' the expenditures upon the children were becoming another handicap.

Dumont found his own extensive field research that in the districts were people were too poor for any hope of social advancement and too remote from centers of modern pleasure the fertility was high. By contrast, in the districts where the standard of comfort was high the fertility level was the lower. Thereby, he argued that fertility varied inversely with the strength of social capillarity.

The concept of 'social capillarity', in which economic, social and individual psychological dimensions intertwined, was extensively employed in the elaborations of fertility decline in modern societies. McCleary (1937), while explaining why the birth rate was declining in Britain, used the social capillarity concept as well. He additionally claimed that social capillarity was operating in the sphere of pleasure as well as in economy. By saying so, he actually underlined the role of human motives in the fertility transition. Modern civilization, in this sense, was offering various types sources of enjoyment; as such, art, traveling, sport, social entertainments etc. All of these facilities were advertised in the economy and as a result people was spending money upon them.

According to McCleary, the family limitation in modern societies was a result of the increasing 'rationalization' of life. As modern life required a planning outlook for production and organization, a planned number of children were the natural outcome of the general planning perspective. He anticipated that fertility level in modern societies would tend to lower as opportunities of education and consumption spread through to lower-middle classes who hitherto hardly had these prospects. The invention of contraception, meanwhile, met the demand of all modern physiological, aesthetic and economic requirements. He insisted that even though economic and

social benefits would have more equally distributed among people, the fertility would have still declined since the spiritual values of people might had been changed in the course of modernization. The social ideal of the society had now turned out "…*the achievement of successful individual self-seeking, the stars of publicity, the woman who "instead of children has soul conflicts", or proclaims her self-ownership...*" (McCleary, 1937). Therefore, the fertility decline, as being a problem for him, had already transcended being prospect of the modern economic phenomenon to be a matter of "mood" of the modern societies.

Adolphe Landry likewise underlined significance of individualism in modernizing societies that emerged as a result of economic, social and moral transformations. Due to these transformations, the individual considerations, rather than social, were gaining importance in reproductive choices. Landry (1987/1933) asserted as follows:

> "*But there are also selfish feelings, which make people consider the child as an expense and inconvenience: will the child not be an obstacle to mother's exercising her profession? If she has an occupation? Will the child not get in the way of the parents' pleasures and travel, the taste for which of selfish feelings is becoming greater and greater: we observe that among the lines of reasoning that one can follow, those that make the limitation of births more rigorous are increasingly pursued*."

As aspirations to reach higher standard of living and women increasingly involve labor market, fertility preferences become under control of growing individualistic and egoistic orientations. He emphasized that certain customs in the countries where fertility started to decline was modifying the pace of transition. Landry did not see any limit to decreasing fertility by itself and he urged for pronatalist political activism with to aim to stop or reverse the process (Chesnais, 2003).

Carr-Saunders's writings, another author of demographic transition idea, reveal that his elaborations on modernization and fertility decline association were highly in accordance with the 'social capillarity' based explanations. He underlined the negative correlation between economic class and fertility; the upper social and economic classes began to restrict their fertility before the lower social and economic classes. Birth control was spreading from higher classes downwards like other fashion items were spreading from top to bottom.

The members of the high economic classes he said (Carr-Saunders, 1925) "*...would be the first to learn new ideas and to adopt new habits*". The economic requirements of fertility restriction were more prevalent among the upper classes, since they were considering the high fertility as hazardous to maintain their economic position. Apart from adjustment to increasing economic standards there were other causes that had been leading upper classes to restrict their fertility. For example, social life, among the upper classes, provides numerous ways in which the "*desire for relaxation*", "*change*" and "*pleasure*" is satisfied. Even the marriage itself was requiring abandonment of diverse opportunities (Carr-Saunders, 1925). The parents were regarding the children as burden since they were hardening parents engaging into social activities. These activities, he said, "*may be of most selfish kind, or they may take the shape of innocuous amusements and relaxations, theatres, cinemas, parties, holidays, and so on*…" (Carr-Saunders, 1964/1936) Family limitation was offering a means to sustaining social life. Thus, the fertility decline was not easy solved solely with economic remedies like the pronatalist politicians defended. There were several considerations; medial, psychological, economic and social, of couples establishing and practicing their reproductive choices.

The lower classes, on the other hand, did not have much in to disposal so they were not attempting to preserve or raise their standard of living via birth control. The family limitation practices would be spread among lower classes as well, if their social and economic level was raised to a worthwhile position to maintain.

Another important factor, which was causing differential fertility between upper and lower economic classes for Carr- Saunders (1925), was lying in the nature of economic transfers between the generations:

> "*Again, though children are no longer the economic asset among the lower classes which they were before the passing of the Factory Act, the possession of children is generally looked upon among those classes as a support in old age when the power of earning has gone. Children, on the other hand, among the upper classes have rather to be provided for, and in any case are seldom regarded as a support."*

In fact, the wealth flow, from younger generations to older ones, was shown as one of the causes maintaining high fertility level by authors too. For example, the commission constituted to scrutinize causes of effects of the declining birth rate in Britain stated "*in many sections of the working-class the hope of being aided by sons and daughters in old age acts a prudential stimulus, so far at least as to make childless marriages uncommon*" (Commission of Inquiry; 1916). The commission was also pointing the factor of child-labor as a direct stimulus to having a large family.

Carr-Saunders noted that differential fertility was visible among different occupational groups. This was partially related to fact that different occupations were resulting different in economic statuses. But also there was a linkage between types of occupations and 'status of women' which was influential factor on the fertility (Carr-Saunders, 1925):

> *"There is another feature of modern civilization which tends towards the acceptance of the principle of family limitation. The raising status of women has been one of the chief characteristics of recent social evolution. Women have become better educated and more independent;*

their position in every respect become dignified. Observation seems to show that where this change most market, there the principle of family limitation has been most readily accepted"

"…the increasing dignity of the position of women in society is a factor leading to the acceptance of the principle of family limitation"

The occupation and fertility linkage, regarding employment of women, was seen by other researchers too. For example Glass and Blacker (1938) asserted that those women who had opportunities of permanent gainful employment did not marry as frequently as or as early as did other women. The empowerment of women, or their reliance of their own incomes, was presented as a cause of decreasing propensity of marriage thus also contributing the diminishing fertility level in the society.

One chapter of Carr-Saunders book '*World Population*', published first in 1936, was titled as "The Small Family System" where he elaborated the linkage between changes in the cultural sphere: family, religion, diffusion of new norms on the one hand and declining fertility on the other (Carr-Saunders, 1964/1936). His examination of the fertility transition as seeing it as spread of 'the small family system'-or diffusion of small family size norm- in Europe was as important as the idea of Dumont's 'social capillarity' on the future development course of fertility transition theories.

He asserted that before Christianity become dominant religion in Europe, the small family system had prevailed in which family size was controlled by limiting conceptions, practicing abortion and infanticide. Christianity brought about a new mode of life and having large families – not as a family system but in terms of size - was encouraged in the culture.

However, at the end of 18th century, French revolution commenced fundamental and enduring changes not only in the social and economic structure in the society but also in the mentality of the people. The common man, peasants, was librated from feudal bonds and individuality encouraged. Meanwhile, revolution also initiated the decline of religious belief and weakened previously prevalent moral sentiments. The logical, realistic and unsentimental attitudes toward life were becoming more and more dominant among people. As related to this development, birth control practice, which had already existed in France, diffused in society. Having a large family was not only considered as a threat to financial security of the individuals but also it became the mark of bad citizenship.

Similarly in France, with different timings norms patronizing having a large family were replaced by small family norms in England, United States, and Holland etc. Economic factors appeared important in England for small family norm since fertility decline coincided with economic depression. But for the other industrialized countries, Carr-Saunders (1964/1936) did not see a pervasive association between the economic considerations and spread of small family norm. Instead, he explained, the new norms acknowledged via a diffusion process which was not necessarily directly related to economic development:

> *"How then are we to explain the spread of the small family system? To countries to which the habit first came were not alike in regard either to density of population or to stage of economic development; nor were they associated in a common experience of misfortune. But they were associated in sharing a similar mode of life, a fact sometimes expressed by saying that they had reached a fairly similar level of civilization. They used the same mechanisms and contrivances; they adopted very similar clothes and ate similar foods. Moreover, they observed similar social conventions and fashions. It would be possible to give numerous examples of the rapid spread over just this group of countries which took early to family limitation of trivial habits or of important changes of opinion. There can be little doubt that the practice of family limitation*

spread over this group of closely associated countries much as so many other novel habits and new ideas spread"

He stated that prevailing cultural differences in Europe could hinder the diffusion of the small family norm. The trend of fertility in the north-west European countries was reaching to the southern and eastern Europe with a delay. The latter group of countries, though considered part of European civilization, had different habits and conventions than the west. Nevertheless, south and east Europe were "*imitating*" the west Europe; thereby he anticipated a similar trend of fertility decline – even, with a faster pace when it commenced- for these regions.

The differential fertility rate among the countries was partly arising from the fertility differences between urban and rural populations. Since the rural populations were more or less isolated they had less opportunity to learn birth control practices. Additionally, in rural areas large families providing cheap labor supply thus fertility decline was retarded by economic factors.

Another important factor causing differential fertility was the religion. Carr-Saunders (1964/1936) stated that there was an association between religious faith and fertility. When Catholics were compared to Protestants, the birth rate was much higher among the former than the latter. The fertility decrease was also fast in some Catholics countries but where the religious sentiments had become trivial: like in France.

III.1.c. Classical demographic transition theory

By and large, the demographic transition theory was named and proposed as a by-product of work undertaken by demographers at Princeton's Office of Population Research that was directed by Frank W. Notestein during 1940s and 1950s. The Princeton Office of Population Research's demographic point of view had been strongly focused on matters related to international relations thus their concern with

global population growth was not a coincidental academic curiosity (Szreter, 1993; Furedi, 1997). At the beginning of 1939 the Council of the League of Nations appointed a committee to study demographic problems in their economic, financial and social settings. The University of Office of Population Research undertook this task and conducted extensive work during WWII years, which was supposed to be helpful to determine development policies after the Second World War (Notestein et al., 1944).

Apart from Notestein, young demographers involved in the project were Dudley Kirk, Ansley J. Coale, Frank Lorimer, Kingsley Davis, and Irene B. Taeuber. Kirk (1996) later wrote that Notestein initially did not intend to develop a theory of the demographic transition idea. The office successively published four major reports[7]. In these reports social, economic and demographic situations were presented descriptively – with maps, charts and indicators – and these characteristics were analytically examined in a single stream of cultural development perspective. During the mid 1940s, Notestein and Davis elaborated the demographic situation and change in the world using a similar analytical framework (Davis, 1945; Notestein, 1946). At the beginning of 1950s, their framework was seen as an emerging theory to explain the unfolding and diffusing demographic revolution, i.e. the transition of the vital rates from high to low levels (Vance, 1952).

The main theme of these studies was the forecasting of population trends and determining the nature of future population characteristics, which was seen as a "*formidable*" task (Notestein et. al, 1944; Notestein, 1946). Notestein and his team preferred to visit Western Europe's demographic history to gain insight since this was the best-documented experience at that time. Thereby precepts of the initial transition model were almost exclusively derived from social, economic and demographic history of Northwestern Europe and North America. In these regions, the shift from high vital rates to low ones, first in mortality and subsequently in

[7] The Future Population of Europe and the Soviet Union: Population Projections 1940-1970 (1944), Economic Demography of Eastern and Southern Europe (1945), The Population of the Soviet Union: History and Prospects (1946) and Europe's Population in the Interwar Years (1946) (Kirk, 1946).

fertility, and social, political and economic transformation had taken place somewhat simultaneously. Thus proposing a causal association between the trends must have been seen a very 'likely' assumption. In fact, having seen the previous seminal studies on the demographic transition concept, this assumption does not seen to be a very novel innovation[8]. What was the real contribution of the theory may be its much wider historical and geographical scope.

The initial paradigm of the demographic transition theory had an all-encompassing view. The world population was seen as a single entity within which every element –each particular population – was responding in varying degrees to one dynamic social, economic, and demographic 'evolution' process (Davis, 1945). In this manner, existing technological, social and political settings constituted the background of the population growth that dynamically responded "…*to laws of nature moving irresistibly an inevitable goal*" (Notestein, 1946). Also, the population growth is itself seen as affecting future developments of the technological, social, economic and political developments.

The population growth was described with regard to the interplay of death and birth in the transition model by Kirk (1946):

> "*The vital revolution has normally progressed through three stages: (1) a period of declining death rates with constant birth rates and rising natural increase (rapid growth), (2) a period of continued declines in the death rates, with parallel declines in the birth rate still lagging sufficiently to permit a large margin of natural increase (continued rapid growth), and (3) a period of slowing declines in death rates, continued declines in birth rates, and a contraction of natural increase (slowing growth)"*

[8] Hodgston (1983) also claims that Notestein and Davis "rediscovered" many ideas that had been formulated earlier and they selectively borrowed from the work of certain European counterparts and than made their original contributions of their own. Although Notestein's statements were highly concurrent with the previous studies; such as Carr-Saunders' discussion of the demographic process, they are found more lucid and sharply focused (Kirk, 1996).

These successive transitional phases of the vital rates, from high to low levels with different timings, were based on the each society's modernization process (Notestein, 1946):

> *"Few social trends in the modern period have been as universal and persistent as the decline of mortality and fertility. Coming as a result of agricultural, industrial, and technical evolution, the declines were established first in mortality and only after a considerable interval in fertility. The result of this lagging transition from high to low vital rates has been a wave of population growth, moving across Europe with the current modernization"*

Notestein presented a population classification typology, closely parallel to those of Thompson's, as an introduction to his review of the world population growth. In this model, sequentially, every population moves from one type to another as a result of a "*demographic evolution*" which fueled with modernization.

The first type was '*incipient decline*' populations which refer to populations who have completed the transition process from high mortality and fertility to low mortality and fertility (Notestein, 1950). By this he summarized the demographic transition experience of Europe, North America, and Oceania where the transition had been completed at the beginning of the 20th century. He underlined the effect of modernization on their population dynamics. In this manner, establishment of peace and domestic order, agricultural and industrial innovations, sanitary and medical advances and additionally rising level of standards, for him, at first had reduced the mortality while the fertility remained less responsive. The transition to low level in fertility lagged behind that of the mortality basically because of religious doctrines, moral codes, laws, education, community customs, marriage habits and family organizations which worked toward maintaining high fertility.

Notestein claimed that the fertility eventually declined to low levels as drastic changes in social and economic setting radically altered the motives and aims of people with respect to family size. The decline mainly aroused from rational control of fertility behavior by means of contraceptive usage. The decline of fertility commenced first among upper urban classes and afterwards spread through other social classes and rural areas. For example, rising level of popular aspirations, growing individualism, high social mobility and chancing social statuses, changing family functions were the causes pointed out in industrial living conditions which made large families progressively difficult and expensive to maintain (Kirk, 1946). Meanwhile, these populations increasingly replaced older taboos and fatalism with rational thinking in their general behaviors that eased to spread the family limitation notion. Notestein (1950) stated that the population size of incipient decline group might decline in the long run unless immigration substitutes or the decline trend of fertility discontinue.

The second type of the classification was the '*transitional group*' in which both mortality and fertility rates declined with different paces with regard to an ongoing demographic transition process. Eastern Europe, the Soviet Union, Japan, parts of Latin America and Middle East[9] and North Africa were mentioned as being in different stages of the transition group (Notestein, 1946, 1950). He saw for instance a marked similarity between demographic developments in Japan during 1920s and 1930s and those of England forty years earlier (Notestein, 1946). The mortality had already been decreasing in these societies as a response to modernization. The birth rates being about to commence to decline – or a decline had just initiated – were constituted the essential characteristics of this group.

The general economic structure of these populations was dependent upon agriculture but the process of urbanization and industrialization had been underway for sometime. Education and technological skills thereby were improving. Though agrarian family and traits toward childbearing were still predominant they were in the process of modification with regard to necessities of increasing urban and secular

[9] Turkey, for example, mentioned among some countries that were just entering the transitional period (Notestein, 1946).

minded communities. Notestein (1950) claimed that public policy could shorten or lengthen the duration of this transitional period.

The third type was the 'high growth potential' one in which the death and birth rates were close to pre-modern standards and thus had not initiated the transitional growth yet. Central Africa, much of the near East, Asian countries (except the Soviet Union and Japan), Caribbean and Pacific islands, Central and South America constituted this demographic type of populations. While this type was characterized by very high mortality, a period of peace and development with "*strong government, improved means of communication, increasingly productive agriculture, sanitation and epidemic control*" would bring rapid and sustained population growth, even without substantial increases in the levels of living. Fertility level, could remain high since "*…the fundamental nature of the agrarian family life, of native customs, religious beliefs, and educational horizons has changed little"* (Notestein, 1946). As a result, high population growth rate was very likely future due to fact that "*the modern nations of the West have imposed on the world's nonindustrial peoples that part of their culture which reduces mortality sufficiently to permit growth*".

Fertility decrease could follow in these societies as social and economic developments that caused fertility transition in the Western countries come in to play (Notestein, 1946). In this sense; urbanization, rising level of living standards, popular education and popular participation to political life were mentioned as the dimensions of modernization that eventually induce fertility level in 'high growth potential' populations.

Notestein's classification of the populations in relation to their vital rates and examination of each type's common social, economic and political characteristics pawed the way to the basic assumption of the fertility transition. Low reproductive rates and small family pattern were seen evidently associated with urbanized and industrialized societies and contrarily the high fertility preserved through older traditional agrarian manner of life. Thus, transition from high fertility to low one could have been closely related to societal change and modernization. Some

indicators, relatively easy to quantify, gained prominence to explain geographical differences in fertility; degree of urbanization, education, literacy, standards of living and so on.

Nevertheless, the authors of the transition theory were aware of the fact that explanation of fertility differentials was not that straightforward. All together social and economic factors were not sufficient to explain fertility differentials between geographical areas. There were unfitting cases like relatively rural countries of Northern Europe with low reproduction level. Thus, social and economic factors might not be only determinants of fertility decline.

Kirk (1946), for example, mentioned cultural factors that might have played prominent role in the transition to low fertility regime in Europe. Religious differences between societies were one of the cultural characteristics that could account for fertility differentials. Ethnic characteristics with their traditional cultural connections were also important. For example, in East Europe, populations who religiously and/or ethnically had strong traditional ties with Western Europe first initiated fertility decline. Apart from these two cultural factors geographical proximity and closeness of historical association could be affective. Such influences were facilitated by means of communication and mutual relationship between societies via sea – Mediterranean – or river – Danube – which worked as influential bearer of new ideas as well as material good.

Nevertheless, the cultural factors were given a catalyzing role rather than being primary determinant of fertility decline per se (Kirk, 1946);

> *"The small family pattern and resultant lower rates of population growth, already firmly established in Western Europe, were in process of spreading across the continent through the usual channels of cultural diffusion. Low fertility is one element in the nexus of cultural traits that comprise material progress. It was moving across Europe in the company of industrial and urban development, with educational*

advances and with better living conditions. This diffusion was facilitated by geographical proximity and common language, common traditions, and common religion. It was hindered by geographical barriers and ethnic differences."

During the second half of the 1940s, the demographic transition theory turned out to be the preeminent social scientific perspective to examine population issues. Nevertheless, demographic trends in 1950s, both in developed and less developed parts of the world, did raise questions about the adequacy of the theory (Hodgson, 1988). The demographic transition theory even was seen inadequate to understand Europe's demographic transition where the idea originally originated. When it came to understand the developing countries demographic and fertility transition the elaborations of the demographic transition theory was seen more unclear and particularly for policy development as not always very useful.

For the post transitional populations, the theory, except for assuming long-term stagnation at low level, was almost silent about the prime determinants of fertility trends. Thereby, it was unsuccessful to explain upsurge in fertility, the postwar "baby boom", in United States and other developed countries of Europe. There were problems about the hypothetical transition course of the high potential growth populations too. The first half of 1950s witnessed extensive mortality declines in majority of the less developed world. But this was not a consequence of the 'modernization process' as envisaged by the transition theory authors. Rather than the social and economic development, the fast diffusion of several medical innovations -like antibiotics-, and implementation of health programs –like anti-malaria campaigns- brought about the drastic mortality declines. Thus, the transition theory did not offer a reliable basis to explain or predict the relations between mortality decrease in less developed areas and their economy level (Stolnitz, 1958).

The first comprehensive attempt to test the demographic transition theory was the European Fertility Project. The study was conducted by staff and associates of Office of Population Research at Princeton University under the directorship of Ansley Johnson Coale (Bongaarts and Watkins, 1996). The study was initiated in

1963 and aimed to examine the remarkable decline in marital fertility in the 700 provinces in Europe for the period 1870 and 1960. The project was labeled as a macro-level study because data were compiled largely from published census and vital statistics, at the aggregated level (Knodel and Walle, 1979).

The European Fertility Project intended to investigate the basic ideas of the transition theory; namely to see to what extent the theory was adequately in explaining the trends of fertility during the modernization in Europe. In this sense, the study was looking for "*universally valid generalizations*" about the circumstances under which voluntary fertility control –neoMalthusian fertility reduction – appeared in Europe (Coale, 1965). In the European Fertility Project, concurrent to the demographic transition theory there were five general factors suggested as associated with fertility dynamics in Europe (Coale, 1965; 1969):

1. The decline in mortality. Fewer births are needed to achieve a desired family size as child mortality declines.

2. The rising cost and diminished economic advantages of children in urbanized industrial societies. As characteristics of industrialization, children contribute less and cost more in urban environment, especially after establishment of universal primary education and the prohibition of child labor.

3. Higher status of women. The increasing education and employment of women provide wider opportunities and higher status for women. These changes promoted spread of birth control.

4. Religious changes and differences. Early reduction in marital fertility in some of the north and west European countries are attributed to loosening influence of religious institutions in these countries.

5. The development of a secular, rational attitude. Such an attitude assumed to favor the voluntary fertility control and has been regarded as a direct outcome of industrialization and modernization.

During the second part of 1960s the first empirical findings of the study became available for elaboration. Historical evidence from Europe showed influence of each of the abovementioned five factors in the fertility transitions. Nevertheless, counter-examples or exceptions of these associations were as prevalent as the evidences[10]. Accordingly, Coale (1965 and 1969) conceded that "*Fertility reduction seems to be a nearly universal feature of the development of modern secular societies, but its introduction and spread cannot yet be explained by any simple, universally valid model or generalized description*". The only nearly universal factor that was observed as changing at the same time with fertility was literacy level. However, there was no universal relationship between onset of decline and proportion literate at the time of onset.

At the beginning of 1970s, the European Fertility Project was almost completed and A.J. Coale gave the summary of the fertility trends during the demographic transition in Europe period at IUSSP's International Population Conference (Coale, 1973). The major findings, pertaining to general assumptions of the transition theory, can be stated as follows:

1. Large variation in fertility of pre-modern societies. Categorization of fertility in traditional societies under one 'pre-modern' category, as in the demographic transition theory, was not a reliable assumption due to high fertility level variation among them. The differences in proportions married and the differences in marital fertility in pre-transitional populations[11] account for high level of variation.

[10] For example, the fertility in France declined the earliest in Europe before the country attained given socioeconomic development level. Fertility fell in Spain, Bulgaria or other Southern and Eastern European countries while mortality was still at very high level. In many countries, rural fertility declined as early and much as urban fertility. In some countries industrialization was far advanced before marital fertility declined (Coale, 1965 and 1969).

[11] The results highlighted the presence of fertility control in several populations prior to the sustained modern fertility decline (Coale, 1973). Bengtsson and Dribe (2006) recently found importance of deliberate control of the timing of childbirth in order to reduce the negative impacts of short-term economic stress before the fertility transition.

2. Unexpected fertility increase occurred from 1940's through the 1960 in post-transitional societies because of sudden termination of long-standing late marriage and high rates of celibacy.

3. The decline in mortality did not always precede the decline in fertility. The findings of the project shown that decline in mortality and fertility were more or less synchronous or on some cases the decline in fertility preceded the decline in infant mortality.

4. The differences in the experience of fertility transition among countries or regions could not be explained by their recorded differences in socioeconomic characteristics. The associations between the onset of marital fertility decline and level of certain socioeconomic characteristics pointed out country specificity of this relationship. Provinces where marital fertility was at similar level were often geographically adjacent to each other. But in terms of socioeconomic parameters; like proportion of labor force in agriculture or level of infant mortality or the extent of literacy etc., they were quite often dissimilar. 90 percent of total variance in marital fertility was between the project's geographical clusters while only 10 percent within. Results suggested that instead of set of socioeconomic variables linguistic division of some countries was more explanatory variable for the variation in marital fertility.

Coale (1973) concluded from the findings of the project that the demographic transition theory had both power and weaknesses. Its power relied on the fact that with sufficient modernization, fertility and mortality was changing in a predictable manner. The weakness, on the other hand, was related with the difficulty of defining a precise "*threshold (a checklist of essential characteristics, a combination score on some socioeconomic scale)"* of the modernization that would reliably designate the onset of fertility transition. The results revealed the difficulty of defining measures of high and low levels of vital rates for traditional and modernized societies in 1960s from the past experience of Europe. For Coale, it was

more relevant to talk about *regional* or *moving* thresholds which were determined by cultural differences in different parts of the world.

Perhaps the most influential of the Coale's statements, was the well-known "*preconditions for sustained decline in marital fertility*" (Coale, 1973). He, instead of re-stating a new 'grand' demographic transition theory, preferred to list three general prerequisites for a major fall in marital fertility:

1. *Fertility must be within the calculus of conscious choice. Potential parents must consider it an acceptable mode of thought and form of behavior to balance advantages and disadvantages before deciding to have another child—unlike, for example, most present day Hutterites or Amish, who would consider such calculations immoral, and consequently do not control marital fertility.*

2. *Reduced fertility must be advantageous. Perceived social and economic circumstances must make reduced fertility seem an advantage to individual couples.*

3. *Effective techniques of fertility reduction must be available. Procedures that will in fact prevent births must be known, and there must be sufficient communication between spouses and sufficient sustained will, in both, to employ them successfully.*

Coale's three preconditions can be seen as a reconciliation attempt of the two facts, which the classical version of transition theory failed to do so. The general fertility decline in modernized societies between 1860s and 1930s was the first fact. The second one, which emerged as a major finding of the European Fertility Project, was the variety of circumstances and conditions from where the fertility transition emerged. The new perception of Coale indented to understand the different timings and patterns of the fertility transitions. For example, all the preconditions might be

prevalent in some pre-modern societies thus fertility could decline before the extensive modernization. Conversely, none of the preconditions might exist in some pre-modern societies and the fertility decline came later. Between these two extremes, one or more, but not all, preconditions existed in the majority of pre-modern societies. Various combinations of the preconditions could have explained the variety of correlations between marital fertility and various socioeconomic attributes, among the regions or provinces.

Coale's perspective is more flexible and inclusive than the classical transition theory yet it is only related to the onset of fertility decline. His preconditions may be utilized to explain differences in fertility and pace of decline among populations, which are in the early stages of the transition. However, if we deal with populations in which the fertility transition had already gained momentum, to explain differential fertility the new perspective is as salient as the classical transition theory.

The new framework led the transition theory followers to better acknowledge the importance of the cultural setting independently from the socioeconomic conditions on the onset and spread of fertility decline (Knodel and Walle, 1979; Bongaarts and Watkins, 1996). In fact, the early authors of the demographic transition idea (e.g. Carr-Saunders, 1964/1936) and even some of the transition theory writers (e.g. Kirk, 1946), were state similar explanations. Thus, one could have found indications from the early literature about the role of cultural differences during the transition course. Nevertheless, the influence of socioeconomic change, modernization, was so much underlined in the demographic transition literature that the 'culture' had to wait to gain more preeminence until the findings of European Fertility Project appeared. One can ask why it took such a long time to incorporate the role of culture into the theoretical framework though it had already been mentioned in earlier literature.

The answer can be found when we consider the main paradigm when the demographic transition theory was formed. The transition theory actually built on a certain modernization paradigm (or theory) whose origins can be traced back to the response of American political elites and intellectuals to the international setting of

the post-Second World War era. The modernization concept originally appeared concordant to the rise of industrialization and nation-state in the late 18th and in 19th centuries in Europe. The end of the Second-World War marked the end of colonialism and less developed countries – or the Third World as in the past literature – became a new phenomenon in the world politics. Accordingly, significant social science activities directed to the problems of economic development, political stability, and social and cultural change issues in these countries. Likewise, at the beginning of 1950s, mounting population growth in the less developed part of the world, especially in already populous countries of Asia, came into foreground. The longstanding major Malthusian debates, whether world's food and resource supplies be adequate for expanding population size or not, revived and most of the transition theory authors increasingly shifted their studies on the demographic trends of 'these high potential growth regions'. In this vein, Western scholars utilized an analytical notion, modernization, to examine nature of the social change and classify societies on the basis of ongoing social changes. Social Darwinism of the 19th century and 20th century functionalism had been influential in the shaping of this modernization notion (Mazrui, 1968). Tipps (1973) defines the modernization notion of the post-war era as follows:

> *"Modernization, then, becomes a transition, or rather a series of transitions from primitive, subsistence economies to technology-intensive, industrialized-economies; from subject to participant political cultures; from closed, ascriptive status systems to open, achievement-oriented systems; from extended to nuclear kinship units; from religious to secular ideologies; and so on….Thus conceived, modernization is not a process of change, but one which is defined in terms of the goals towards which it is moving"*

The notion of post-war modernization was a concept that instead of providing clarity and precision about social changes evoked vague and generalized images (Tipps, 1973). There have been several ideological and empirical criticisms directed

to the modernization concept (Gusfield, 1965; Tipps, 1973) and these criticisms can be essentially directed to the transition theory as well. As for ideological appraisal; postwar modernization theory widely used the 'traditional' and 'modernity' dichotomy[12] as polar opposites, which meant that all traditional and modern forms were seen as in conflict. The understanding of transition was as a linear perception of social change and this view obscured the wide variety of outcomes and possibilities of change and/or continuity. Traditional societies were conceived as always static and homogenous until they encounter modernization. Modernization theory predicted a convergence of diverse patterns towards the Western prototypical pattern. That is to say, it assumed a unidirectional change for all traditional societies towards the Western model.

The empirical criticisms rose as extensive field research was conducted in the less developed regions of the world during 1960s and 1970s. Concrete and historical case studies of modernization and cross-cultural comparisons conceded variations and internal dynamism inside the traditional societies with different social change pathways[13]. In the face of these criticisms Post-war modernization theory did lose its popularity in social sciences at the beginning of 1970s when alternative approaches to tradition and modernity began to appear in the literature (Bendix, 1967). It is not a mere coincidence that debut and demise of the post-war modernization theory and the demographic transition theory occurred simultaneously. The complexity of the association between modernization and social change acknowledged that the quests for finding a universal type of modernization and fertility decline relationship were not valid.

Another reason why the classical version of the theory lost its importance is related to its own 'forefathers'. The perspective of the authors of the demographic transition theory shifted several times between a social scientific approach and a policy orientation from the mid 1950s onwards. The dual development course of the demographic thought in the United States has left its negative imprints on

[12] Likewise, since the classical demographic theory conceded this paradigm it divided the world into two parts; as "the archaic agricultural nations" and "the modern industrial nations".
[13] In order to see some of the major studies conducted in this line in Turkey Kandiyoti (1974 and 1977); Kağıtçıbaşı (1996) and Tekçe (2002)

development of the demographic transition theory (Hodgson, 1983, 1988; Szeter, 1993; Furedi, 1997). Both Notestein and Davis had lost their optimism about economic and demographic future of the highly densely populated Asian societies.

Relying upon solely on modernization and urban industrial development to initiate and hasten the fertility transition was a very significant risk undertaking for these societies (Notestein, 1953; Davis, 1956). As Notestein and Davis gradually offered to employ a sort of 'social engineering', especially by means of intensive family planning programs, to reduce fertility level in developing countries, the social scientific perspective in their own theory lost the significance. This policy oriented outlook in the demographic transition literature, contrary to its earlier version, considered population –fertility- as an independent variable that had to be manipulated by means of direct and indirect measures.

By the time the demographic transition theory first appeared in the social science literature, the world was at onset of a rapid population growth process, especially in the less affluent countries due to sharply declining mortality rates. Indeed, this happened and the total world population was boosted in the second half of the 20th century. However, the fertility began to decline globally in 1960s (Caldwell, 2001; Casterline, 2001a). Meanwhile, population studies increasingly focused to understand fertility dynamics in relation to social change. The issue of differential fertility among populations; causes, timing and pace of fertility transition, has turned out to be the major preoccupation of the demography literature. The theory of population has in some regards evolved more in the direction of fertility research, presumably because understanding the modernization and mortality decline association has been relatively more straightforward. Shift from the agricultural to industrial production provided various noticeable by-products that had enormous positive impact on human life span. It has also been evident that these by-products often are transferable from one society to another without requiring any real change in the mode of production. However, fertility is an eminently social behavior embedded in cultural environment, explicitly which depends upon decisions or non-decisions of couples.

After the European Fertility Project, most research has emphasized changes in the socio-cultural meaning of children and reproductive behavior without necessarily rejecting the interpretation of the classical version of demographic transition theory. Since the beginning of 1970s, so as to scrutinize the determinants of the fertility behavior in different settings new line of inquires are emerging. World Fertility Surveys and Value of Children Surveys, Demographic Health Surveys have been useful to understand the nature of the contemporary demographic and fertility behavior. These new elaborations are often even labeled as 'fertility transition theories' that are not regarded necessarily in relation to the overall demographic transition theory (Mason, 1997). I will deal with some of these in the following sections.

III.2. ECONOMIC APPROACHES

At the end of 1950s, the demographic literature was advanced enough to posit reliable explanations for the factors determining mortality trends accompanying to contemporary modernization. The real heart of the matter in the literature since then has been the explanations about the fertility transition as regards modernization. Economic approaches to fertility decline intends to provide appropriate theoretical explanations for the effect of changes in economic environment, allocation of time, and wealth of families as regards production and consumption on changes in reproductive demands and fertility. Economic explanations intend to find suitable clarifications for the apparent shortcomings found in the demographic transition theory[14] as mentioned in the previous section. They do not introduce a new set of consequences of modernization but rather developed plausible arguments that illustrate how outcomes of modernization make contribution towards reducing desired and/or actual fertility of people.

The essential element, which needs to be stressed for the economic perspective, has been the incentives or rationale or motivations behind the desire to have large or small families. In this vein, this approach incorporates cost-benefit analysis so as to scrutinize the long-term effects of rise in income on family size decisions. The assumption that individuals act with substantive rationality while realizing their reproductive intensions, as they do for economic decisions, is the main paradigm of this view. Substantive rational behavior presumes that activities are optimally achieved within the limits of given conditions and constrains (De Brujin, 1999). The individual is conceived as a rational agent who maximizes utility with a clear view of available means. The agent has the ability to evaluate circumstances against a preference ordering that is supposed to be stable, consistent, precise and exogenous to the decision-making process.

[14] Some of the economic theory authors even regarded the demographic transition theory as an "*amalgam of generalizations*" but not as a social scientific theory (Leibenstein, 1957)

III.2.a. The classical framework on the relationship between women's income and fertility decisions

Harvey Leibenstein (1957) was the progenitor who tried to incorporate economic perspective in fertility decisions. According to Leibenstein, in order to establish a systematic analysis of the childbearing trends during the course of economic development, at the beginning two different rationales need to be clarified. The first was the rationale behind the high birth rate in the subsistence level economy and the second was the rationale for the changing motivations about childbearing as economic development occurs. He additionally contended that appearing motivations conducive to smaller families were not sufficient enough to bring about general fertility decline. It was also necessary "*to have the spread of information and available means with which to make the appropriate choices to fulfill the new desires"* (Leibenstein, 1957). Thus his theory was giving some space to diffusion arguments.

Liebenstein used an economic framework to examine how transformation from one stage to another could occur during the demographic transition course. He defined three types of utilities that parents could expect to derive from their children. These are: 1) the utility derived as a 'consumption good', a source of personal pleasure to the parents, 2) the utility derived as a productive agent, that is at some time point the child may enter the labor force and contribute to family income and 3) the utility derived as a potential source of security, especially as old age security. For his notion, the decision of having an additional child was based on the balance between aforementioned utilities and monetary and psychological costs pertaining to having a child.

The costs of having an additional child could be divided into two dimensions. The first one was the direct costs; conventional expenses of maintaining a child – like foods, clothing, training etc. The second one was the indirect costs that referred to the opportunities foregone due to the existence of an

additional child; likewise lost earnings during the gestation period or the lessened mobility of parents with large family etc.

Leibenstein asserted that during the course of economic development three important developments affect the utilities and costs of having an additional child. These were: increase in chance of survival, rise in per capita income, and changes in occupational distribution in society. These transformations were altering motivations and eventually become driving forces of fertility transition.

He asserted that in the pre-transitional populations the utility and cost factors were all working in favor of the motivations that were conducive to very high fertility rates due to high mortality. The demographic transition was then initiated with mortality decline first and fertility decline with a time lag. Therefore, his explanations are salient in front of the cases where mortality and fertility declined simultaneously or where fertility decline preceded mortality decline. So as to explain the time lag of fertility decline, he claimed that declining infant mortality might initially enhance the value of child as a source of income and old-age security. However, in the long run, gains from the increasing survival became progressively smaller as the the diminishing utility and increasing costs of an additional child turns out be more important. He coined this duration as "*realization lag*" (Leibenstein, 1957).

Why and how do populations overcome this time lag between mortality and fertility decline? He assumed a stagnant consumption utility of children with increasing income during early transitional stage. The higher income eventually brought less utility to be derived from a child as a productive agent and old age security. The reason of this lessening utility was two fold. First, a higher income mean increasing time spent on child training and education and secondly, parents were able to ensure old age security by themselves. In the other direction, the direct and indirect costs of having child were tending to increase along with the increasing income level. Lastly, occupational distribution effect was increasing costs of children. The more specialized urban activities required more costly training for children. In order to take advantage of new and different economic opportunities, parents inclined to move to urban areas and to form smaller families. Therefore,

closing of the time lag essentially depended upon the rate of economic development.

Leibenstein used the above-described framework to explain 'historical demographic transitions'. However, surprisingly within the same chapter of his book (page 168 in Leibenstein 1957), he turned out to be unsure whether these relationships could work when explaining ongoing demographic transitions in the less developed world:

> "*One can not argue, as Josue de Castro seems to argue that on the basis of historical evidence, fertility decline is a consequence of economic development and if we can just take care of development, we need not worry about birth rates. The reason why this approach is fallacious is that the economy might not have experienced sustained development if fertility rates had not declined at some crucial stage during this experience*"

Leibenstein was hesitant for the same reasons as Notestein (1953) and Davis as discussed in the previous section. The fast mortality decline and slow overall economic change might result longer time lag for fertility decline, which results in high population growth. Meanwhile, as fertility stalls at high level or decline very slowly there was a risk that "*population growth absorbs potential national incomes*" which in turn hinders the expected "*actual*" fertility decline. It becomes highly obscure in these explanations, as in the demographic transition theory of late 1950s, which factor is actually causal and which is the outcome. That is to say, the economic development and fertility decline are two phenomenons changing their sequence in the causality relationship; between being a dependent and independent variable. Likewise Notestein and Davis but much less precisely, Leibenstein pointed out the need of "*governmental intervention*" in the fertility transitions of the developing countries.

During 1970s, Harvey Leibenstein criticized the economic theorizing of fertility of his time and introduced new explanations. According to these new

arguments, economic theories of fertility should focuses on large fertility differences – or transition to higher order births than the second one– taking for granted that people usually opt to have at least a few children. Also, he suggested focusing turning points in fertility trend rather than the trend per se (Leibenstein, 1974).

Leibenstein tried to bring some cultural view in his economic approach by reevaluating role of played opportunity cost of mothers in fertility transitions. He underlined that if male breadwinner model so dominant in society then high education level and urban residence may not be relevant factors for increasing opportunity cost of having child. Economic changes rather influence the social status of families and changing social status of families would alter the taste for the goods and services, competing with children. This new assumption required replacing diminishing marginal utility presumption to increasing marginal utility of some goods and expenditures. In fact, what we can claim here that his attempt to develop an economic explanation of the secular fertility decline is highly resemble in essence to 'social capillarity' thesis of Arsene Dumont (Van De Walle, 2003).

Another important figure who made contribution to development of the economic theories of fertility decisions was Gary Becker (Overbeek, 1977). From 1960s onwards, Becker's economic theory of fertility, the New Home Economics, has turned out to be highly prominent explanation of fertility decisions in more affluent societies where the fertility transition had already completed (Espenshade, 1972). Due to availability of modern contraceptive technology and low psychic cost of birth control in modern societies, Becker assumed initially that each family had perfect control over both the number and spacing of births (Becker, 1960).

Becker inventively brought micro consumption theory – the theory of the demand for consumer durables - of economy into the analysis of fertility decisions and differentials. According to this notion, since children provide psychic income or satisfaction as well as money income to parents thus they are treated as a special kind of consumption goods. Thereby, Becker proposed to perceive couples decision to have children in the same manner as the household views purchasing other durable goods. Then one would have expected that with increasing income, parents should have 'bought' more children to consume higher consumption utility. Empirical

search nevertheless has shown the opposite; increasing income and fertility mostly is inversely related. So as to solve the puzzle, Becker addressed the quantity and quality dimensions. As families did not only desire to buy more units but also better quality goods, parents with higher income had a demand for higher 'quality' children. The quality meant the sum of all investments and expenditures spent on children. He argued that with higher income, demand for both the quantity and quality of children should be increased yet increase in demand for quality surpasses the rise in demand for quantity. The reason of this argument was that "*the quantity elasticity should be small compared to the quality elasticity*" (Becker, 1960).

Later he modified this view and argued that the interaction between the prices of quality and quantity of children was the main cause of a negative relationship between increasing income and fertility (Becker and Tomes, 1976; 1993). In order to explain the nature of this relationship and fertility differentials between high and low income groups, he focused on the differences in returns of education that typically accompanies economic development. If increasing income were related to investment in education, the higher income groups would opt to invest more in child's education (quality), which in turn necessitates lower fertility. On the other hand, social groups, which could not able make worthwhile investment in education and thus stagnated at low level of income, were expected to make less investment in quality. Therefore, fertility outcome of these groups were high due to lack of quality investments on children.

Becker contented with the view that decrease in child mortality correspondingly induce decline in births since "*for parents are primarily interested in survivors, not in births per se*" (Becker, 1960). He extended this idea later on that declines in child and adult mortality reduce the demand for large families and raises human capital investment in each child (Becker, 1992). The reason of this was that parents were actually trying to adjust several uncertainties. In less developed settings, death of a child with much human capital was jeopardizing most of the old-age insurance protection that parents expected to gain. Likewise, another important uncertainty adjustment might arise from the presence of strong son preferences in some cultural settings – like in Asia and Africa. If the culture stipulated expectation

of higher utility from sons, accordingly the demand for having additional child would be higher too. Becker argued that economic growth and development would lower the value of sons by reducing monetary benefits obtained from children.

III.2.b. A synthesis of demographic, sociological and economic perspectives

Another line in economic theory of fertility was developed in mid 1970s. Richard A. Easterlin (1975; 1978) synthesized demographic and sociological perspective to economic explanations of fertility behavior. Thereby, he tried to establish a wider framework within which past and present trends, fluctuations and differentials in fertility dynamics could be analyzed. While Easterlin acknowledged importance and successes of the antecedent theses in the economic approach, pertaining to demand side of the income and fertility relationship, he opted to broaden the framework towards the supply side (Easterlin, 1975).

Easterlin took the total number of 'surviving' children, rather than births, of a couple as the principal dependent variable. This framework, however, left aside formation of reproductive unions and child spacing dimensions. He defined the determinants of the fertility as follows (Easterlin, 1975):

> *1. "the demand for children, C_d, the number of surviving children parents would want if fertility regulation were costless;*
>
> *2. the potential output of children, C_n, the number of surviving children parents would have if they did not deliberately limit fertility; and*
>
> *3. the cost of fertility regulation, including both subjective (psychic) costs and objective costs, the time and money required to learn about and use specific techniques."*

The first component, demand for children, was based on microeconomic consumer choice arguments of as we saw above. Households were seen as units that were balancing their subjective tastes for goods and children against externally determined constrains of price and income so as to maximize their satisfaction. The number of children desired would vary directly with household income and with the price of goods relative to children. In fact, Easterlin found previous formulations less insightful since they had given minor importance to formation of tastes. Variations in infant and child mortality were responsible to birth rate differentials under the equal taste, price and income conditions as the main dependent variable was the surviving number of children. He contended the idea that "*the higher the survival prospect, the lower the birth rate*" (Easterlin, 1975). The subjective preference about child quality was exposed to change with increasing income at the expense of number of children.

The second component, the supply or production side of fertility referred to the number of surviving children a household would have if fertility were not deliberately controlled. The supply side thereby was determined by the interplay between natural fertility and infant/child mortality. Inclusion of the natural fertility concept shows that Easterlin indeed tried to bring more demographic and sociological perspectives into the economic analysis of fertility. Hitherto Leibenstein and Becker also mentioned effect of the practice of birth control methods and probable outcomes of family planning programs yet their conjectures are not very clear. Probably the reason is related to fact that they established their arguments mainly over the developed country contexts where family planning had already been widespread.

Easterlin however gave more emphasize to the origins of the birth control practice and argued that the response to a family planning program would be very different depending on the motivations of couples. The motivation for fertility limitation was jointly determined by demand and supply for children. If the supply falls short of demand, $C_n<C_d$, there was no desire to limit fertility due to presence of "*excess demand*". On the contrary, if supply exceeds the demand, $C_n>C_d$, one could assume an "*excess supply"* situation in which parents would face unwanted children. Motivation was a necessary but not sufficient condition for fertility limitation.

Easterlin (1975) namely hold that "*whether fertility control will actually be used depends upon how the costs of fertility regulation compare with the motivation to limit fertility*". These costs were twofold; psychic and market costs. The former was associated with the displeasure with the idea or practice of fertility control and the latter one was related to the degree of access or cost of fertility control.

The cost aspect of fertility regulation had been a very loosely elaborated dimension in previous economic theorizing. In addition it seems that Easterlin tried to bridge the two dimensions; of the cultural setting in society and that of the actual economic condition wherein people live. Regarding the economic conditions as not sole determinant of fertility transition also fits with Coale's precondition arguments; *ready*, *willing* and *able* for the onset of fertility transition (Coale, 1973). Before Easterlin, economic approaches to fertility behavior were based on the demand side – effect of income on fertility- and only vaguely elaborated on the costs or availability of fertility limitation methods. He integrated a third determinant, the supply side – related to potential output of children- into the economic approach to fertility dynamics.

Easterlin applied his theoretical framework both past and present fertility dynamics (Easterlin, 1978; 1981; 1987). In particular, he examined the modernization and fertility decline linkage by illustrating changes in the supply-demand-regulation determinants of fertility behavior. Easterlin's, integration of economic and sociological dimensions has facilitated the investigation of socio-economic determinants of fertility transitions in contemporary modernizing societies.

The socioeconomic analysis of fertility has developed since the 1970s as complementary to the demographic-biological approaches associated with 'intermediate variables' of sexual union/nuptiality, intercourse, conception and gestation (Schnaiberg, 1974). Information collected via global comparative surveys has facilitated the development of the socioeconomic analysis of fertility in developing countries. Fertility differentials among different socio-economic groups have been documented and analyzed via standardized variables in World Fertility Surveys (WFS) (1972-1984) and its successor The Demographic Health Surveys (DHS) (1985 onwards) (Singh and Casterline, 1985; Muhuri et. al, 1994; Martin

1994). Typical socio-economic information collected by these cross-sectional field surveys are: the educational attainment of the respondent and her partner, present and childhood type of place of residence (rural or urban), work status of women and husband (before and after the first union), and possessions of various household durables and amenities. Among these variables three hold a preeminent position as representing socioeconomic factors; namely, level of education attainment of women and their husbands, type of place of residence, and female employment (Singh and Casterline, 1985; Muhuri et. al, 1994). We now discuss how these individual traits are integrated in Easterlin's socioeconomic framework.

In Easterlin's notion modernization referred to all transformations in economic, social, and political organization and in human personality and did not explicitly refer to Western experience (Easterlin, 1978). In this vein, modernization[15] was embracing five important transformations that brought about the shift to modern conditions of childbearing (Easterlin, 1978):

1. *Innovations in public health and medical care*
2. *Innovations in formal schooling*
3. *Urbanization*
4. *The introduction of new goods*
5. *The establishment of family planning programs*

Table III.1 of (Easterlin and Crimmins, 1987) presents a brief description of how these modernization aspects would have an influence on the family size limitation behavior. In the table, only the most plausible direct links between modernization and reproductive behavior is covered. An entry in a cell indicates how

[15] Easterlin contended actually that the list of modernization aspects includes more items; such as, "*per capita income growth, female employment in the modern sector, changes in the family structure, mass media developments, modernization of government administration and changes in human attitudes and personality"* (Easterlin and Crimmins, 1987).

the specified item on left influences the fertility determinant at the top; namely positively (+) or negatively (−).

1. Innovations in public health and medical care:

Innovations in public health and medical care could have tended to increase potential supply of children in two ways; as increasing natural fertility of women and increasing survival probability of children. Improved health conditions additionally could have a positive effect on raise per capita income due to fact that healthier and energetic population could be economically more productive. Thus innovations in public health also have an indirect influence on the fertility determinants via per capita income rise.

There has been several studies conducted to identify and measure the specific societal and behavioural mechanisms through which increasing survival potentially affects fertility (Montgomery and Cohen, 1998). The infant/child mortality and fertility are assumed to linked by two main mechnasims. The first one is a biologic effect, called as "lactation-interruption": the death of an infant interrupts the anovulatory interval following a birth, thereby mother may expose sooner another pregnancy risk than would have been the case had the child survived (Preston, 1978). The second important mechanism is called as the "replacement" effect: parents replace children who have died in order to achieve their desired surviving number of children (Scrimshaw, 1978; Olsen 1980). The lactation-interruption effect largely found in traditional societies with long durations of breastfeeding or postpartum abstinence and with limited use of contraception. The replacement effect on the other hand has the strongest in populations where the deliberate control of fertility is extensive.

Table III.2.b.1. Direction of modernization effects on determinants of deliberate fertility control

	Demand C_d			Supply C_n		Regulation costs, RC	
Aspects of modernization	**Tastes**	**Inco -me**	**Prices**	**Natural fertility**	**Survival prospects**	**Subje-ctive**	**Mark-et**
1. Better public health and medical care				+	+		
2. Growth in formal education	–		–	+	+	–	–
3. Urbanization	–		–			–	–
4. New goods							
a. Consumer goods	–						
b. Fertility control						–	–
5. Family planning programs						–	–

Source: Easterlin and Crimmins, 1987

2. Innovations in formal schooling:

The growth of the formal education - and associated expansion of mass media- is one of the most pervasive factors influencing fertility control behavior in Easterlin's framework. This factor had a significant influence on fertility through operating on all demand, supply and regulation cost of fertility. Education could improve general health conditions by improving knowledge with regard to health care innovations. This might lead to raise natural fertility and/or increase survival prospects of babies. Therefore in turn the education indirectly had a positive impact on the supply side. However, education tended to have considerable negative impacts on demand and regulation costs sides.

For the demand side, education was sifting the tastes[16] in a manner unfavorable to children and decreasing prices of goods relative to that of children. Easterlin noted that education and mass media present images of 'modern' life style

[16] Taste for children was defined as "*the intensity of the desires for children relative to goods*" (Easterlin, 1978)

competitive with children. If better education improved the income earning possibilities of women then education would result in increasing opportunity cost of having children. Compulsory education additionally might increase the relative cost of children by reducing the possible contribution of child labor to family income. Education as facilitating obtaining information might alter cultural norms adverse to use of fertility control. Increased education level makes it easier to afford time and monetary costs of the fertility control. Thus, for the regulation side, education is a factor decreasing psychic and market cost of the fertility planning.

In socioeconomic approaches to fertility, theoretical and empirical associations between education and fertility indeed are one of the most frequently investigated topics. In some formulations education is attributed a higher causative role (with particular emphasis on the role of schooling). Caldwell (1976; 1980) argued that the primary determinant of the timing of the onset of the fertility transition in contemporary developing countries was the effect of mass education on the family economy. During the course of economic development the direction of the wealth flow between generations was changing and economic advantage of maximizing number of children loosen its influence. An important dimension of this societal change was the nucleation of existing family structures in the developing countries towards to similar forms of the Western societies. Caldwell formulated this explanation in his well-known ‘wealth flow theory’ (Caldwell, 1976). Later, he also argued that the spread of education could bring about massive societal changes in the developing countries where had not a market economic growth occurred too (Caldwell, 1980). In other words, the mass education could transform attitudes and motivations toward childbearing by transforming the morality governing those relationships changes.

A negative association between women’s education and fertility is a general finding of studies conducted in different developing countries. Conversely, the effect of male education found is weaker -or in some cases positive -than the effect of female education (Singh and Casterline, 1985; Martin, 1994; Muhuri et. al, 1994). However, some researchers argued that those men who marry with educated women are largely in agreement with the low fertility desire of their educated wives already.

Thus, couples joint ability brings about smaller family size rather than increase such abilities in the women alone (Basu, 1999).

The two decades culmination of empirical literature suggests that there is no linear or inverse relationship between the women's education and her fertility level but the level of general socioeconomic development and cultural context influence the nature of relationship (Singh and Casterline, 1985; Jejeebhoy, 1995; Diamond et. al. 1999). There are four common patterns distinguished in this relationship.

The first pattern, inverse relationship, is one in which fertility monotonically falls with increasing level of education. This pattern characterizes countries that have both higher per capita income and higher level of female literacy that reflects changing socioeconomic context of fertility decision-making. Additionally, this type of relationship is prevalent in the most egalitarian settings where gender disparities are low.

The second pattern illustrates a curvilinear relationship, reversed-U or reversed-J, which indicate a few years schooling increase fertility initially yet eventually fertility commence to decline. The third one presents an essentially similar pattern as in the first one though rather than a constant decline in fertility, the relationship is "seven-shaped". Due to few years level of education, health of the mother improves and traditional fertility restraints, such as abstinence or breastfeeding, may disappear. As a result, first few years of schooling may have either no effect on or produce a slight rise in fertility. Such kind of relationship implies that negative impact of women's education on fertility emerges only after a certain minimum level of education attained. The settings characterized by slow socioeconomic development and strong traditionalism – gender inequality- implies presence of a 'thresholds' level of education before the negative relationship emerges. The fourth pattern is positive relationship where fertility rises monotonically with education that characterizes very low level of development. The evidences presented that these relationships are not static. The associations change with time and increasing development, from curvilinear to inverse one.

3. Urbanization:

In Easterlin's synthesis urbanization is considered another important modernization factor. Urbanization reduces the demand for children by lowering tastes and lowering the price of goods relative to children. Urbanization means higher density living conditions, facilitating access to family planning methods, and breaking down of old traditional bonds that had a negative effect on the regulation cost determinant. Indeed in developing countries empirical studies have shown that individual socio-economic structural factors have a stronger impact in urban areas than in rural areas (Bulatao and Lee, 1983). Urbanization is usually characterized by factors that are conducive to lower fertility: rising income, opportunity of education and employment, cultural diversity, openness to change and family planning program efforts (Rodriguez and Cleland, 1981).

However, like the education and fertility association, urbanization effect on the fertility decline is not straightforward either (Muhuri et. al, 1994). Comparative studies have shown it is not only the size of an urban concentration is alone important but rather level of modernization and industrialization in urban areas brings in substantial fertility decline (Singh and Casterline, 1985). Therefore, as in the effect of women's education, some threshold level in urbanization may necessary to pass for observing a fertility decline.

4. The introduction of new goods:

Increasing consumption aspirations was one of the important aspects of the modernization. Easterlin maintained the common idea of economic perspective that households tend to shift their expenditures from items complementary with children towards a new consumption items that are substitute for children. The enjoyment of new goods tends to shift life style other than centering on children. As the relative strength of household desires for goods unrelated to children is increased, desired family size accordingly decrease in this notion.

The modern fertility control methods: oral contraceptives, pill, IUD and condom were considered among these new goods category too. Definitely increasing

consumption of these goods had a decreasing effect on both market and psychic costs of fertility regulation. Caldwell and Caldwell (1997) stressed that the innovation of modern contraceptives was directly linked to the global fertility decline in both developed and developing countries since mid 1960s. They mentioned increasing consumption of modern contraceptives, easier-to-use forms, as one of the underlying reasons for this ongoing phenomenon. According to this explanation, the introduction of fertility control methods might not have influenced fertility directly. They may also bring about change in other behavior of attitudes related to procreation such as sexual behavior.

5. The establishment of a family planning program:

Lastly, Easterlin examined the effect of family planning programs on the determinants of fertility control. Establishment of network of family planning clinics and/or integration of these programs within maternal and child health care facilities should have decreased costs pertaining to fertility regulation. The impact of family planning and reproductive health programs on fertility has remained a controversial issue in the literature though there have been vast amount of data collected on the topic (Bongaarts, 1997). Against the wide agreement on the desirability and rationale of these programs, some demographers claimed that it is change in the fertility desire and not contraceptive access that matter for the onset of fertility decline (Pritchett, 1994). The accumulated literature over the past two decades on the role of improved family planning services usually contended with the view that these programs would have accelerated the fertility transitions in developing world if not caused the decline (Bongaarts, 1997; Casterline 2001b). Because, not only the presence of national family planning programs made contraception easily accessible and publicly available but also, they aimed to legitimize usage (Caldwell and Caldwell, 1997). In this respect, in Easterlin's framework, they might additionally have assisted to reduce psychic costs of fertility regulation in the developing countries.

In the earlier version of this framework, Easterlin (1978) in fact used 'per capita income growth' as the fifth important aspect of modernization instead of

family planning programs. It seems from the end of 1970s to end of 1980s, Easterlin began to believe that the family planning programs –especially in less developed countries- was playing a more noticeable role in influencing reproductive behaviors than the per capita income growth did. As we have seen before, this view also acknowledged by the demographic transition authors by mid-1950s, and stated also by Leibenstein (1957).

What different is in Easterlin's elaborations over this topic from these of Leibenstein and Becker was that he gave much less preeminence to women's role in labor market. He did not reject the argument that with women's rising income, opportunity cost of having children increase. But he rather stressed increase in family income and/or male's income as explanatory categories (Easterlin, 1980).

In his notion, during the early stages of modernization, due to progressive economic growth, per capita income growth effect would bring positive impact on both demand and supply sides of fertility thus family size may not drop immediately. However, with income growth the resources available to households increases and this affects consumption aspirations: those goods and services, conceived as 'luxury' in previous generations, become necessities of the 'good life'. He called this change in the tastes as "*inter-generation taste effect*" (Easterlin, 1978). Consequently, as minimum living standard rose in each generation, children became progressively more expensive to afford and less attractive relative to other goods and services in the market. Therefore, in the advanced phases of modernization, higher income decrease demand for children since 'taste' component in demand side is negatively affected.

In general, we can also assert that increasing per capita income strengthen the influence of all other aspects of modernization. It can help to improve health conditions of individuals, enables to raise education attainment, make easier to integration to urban facilities, and amplify consumption level. As we have seen all these increase the likelihood of deliberate fertility control.

Easterlin made another important contribution to socioeconomic approach to family formation dynamics (marriage and childbearing) as bringing influence of

socialization process in different cohorts into the analysis (Easterlin, 1980). This perspective concerns the timing of marriage and fertility preferences as a realization of pre-conceived lifestyle. An individual's desired lifestyle is formed unintentionally by experience during adolescence at the parental home. In other words, the effect of early life socialization[17], was a considerable factor determining the person's material and reproductive aspirations future life.

He proposed "*the relative income theory*" to explain how marriage and childbearing decisions are made by couples. The relative income was the ratio of income of young couples (or 'men' in the male breadwinner societies) to past income of couple's parents. He claimed that as the relative income of young adults rises they would tend to marry and have children faster due to feeling less economic pressure. On the contrary, as the relative income fell young adults would feel increasing economic stress thus marriage and fertility would decline. Therefore, the prospects at existing and prospective labor market, i.e. whether young adults feel greater economic stress relative to past, be crucial indicator for family formation. The labor market, or income earning opportunities is assumed to be determined by the entry of differently sized cohorts into labor market. The larger cohorts meant more competitive labor market and difficulty of sustaining prefigured standard of living for young adults. This condition was resulting in later marriage and low fertility.

Although this mechanism has been found relevant and promising by several researchers, sufficient empirical proves of the hypothesis have not been obtained (De Bruijn, 1999). However, at least the highlighting of the effect of early life experiences of individuals on their family formation decisions is a noteworthy contribution to the fertility studies.

The economic and socioeconomic explanations for the secular fertility decline have been extensively used in the demography literature. Nevertheless, they have been challenged on several grounds as well. First of all, the underlying paradigm of the economic approaches, rational actor model, has been found problematic per se (Pollak and Watkins, 1993). This conceptual category is seen as

[17] For Easterlin, the factors affecting early age socialization are; one parent's income, religious training, formal education, neighborhood environment, peers and relatives. (Easterlin, 1980).

strongly individualistic, static and lacking a sufficient degree of psychological realism. The assumption of rationality thereby leads to focus more on the outcomes of choices – like number of surviving children - than on how the decision process is formed. The notion of child quality has also been seen as problematic since the value of children, as shown in empirical studies, may differ by parity and by sex.

According to the economic perspective to fertility transition, it is assumed that the fertility decline is largely the consequence of changing parental demand for children brought about by changes in the economic costs and benefits entailed in childbearing. This main hypothesis is found incomplete since it discards the non-economic context in which decision-makers operates (De Bruijn, 1999). Richard Easterlin's synthesis approach provides more insight on the association between socioeconomic development and the fertility transitions than what previous economic approaches did since it synthesis both demand and supply dimension.

III.3. INSTITUTIONAL AND CULTURAL APPROACHES

According to the main paradigm of the institutional approach, fertility decision and behavior takes place in a particular institutional and cultural environment – a context- designated by a normative code and a system of social control (Lesthaeghe, 1980). Hence, change in fertility behavior arises from responses to changes in that environment (McNicoll, 1980). Institutions emerge from each society's unique history and they support a certain 'fertility regime', that is a distinctive pattern of family formation and array of fertility preferences, behaviors and outcomes (McNicoll, 2001). Institutional approach considers variant paths of the transitions and asserts that the fertility transitions are social processes, responding to a variety of initiating conditions rather than mechanistically changing against a single set of conditions (Mason, 2001). Different family and gender systems, for instance, may be same pressures of change yet they may respond differently. The constellation of social institutions in some societies can be more conducive to an early and/or faster fertility transition whereas in others the institutions may impede or delay transition process.

In fact, initially the classical demographic transition theory literature was quite rich of institutional content as a part of explanation of fertility transition. Notestein (1953) referred, for instance, to religious doctrines, moral codes, laws, educations, community customs, marriage habits and family organizations. The social institutions in pre-industrial populations were seen as hampering factors for the fertility transitions and as pro-natalist. These institutions however were not seen as persistent structures. Industrialization and modernization were assumed to be replacing traditional institutions, different from one society to another, to a modern – universal- set of institutions and mentalities. Reproductive area, formerly void of self-conscious decision making, became subject to "calculus of conscious choice" as individual rationality was regarded with traditional institutions. In the demographic transition model therefore, the social institutions were seen typically within the 'traditional' versus 'modern' dichotomy. They were characteristics of agricultural (traditional) and industrial (modern) production types. Therefore, cultural factors

and/or social institutions were mainly found relevant at the onset of transitions, leaving their position to a common rational actor mentality in the course of societal change.

Until the 1970s, institutional elaboration had less importance than socioeconomic structural change explanations in the demographic transition theory based studies. In the last three decades it has resurfaced in fertility studies, along with innovation and diffusion based explanations, as cultural dimension gained preeminence in theoretical explanations (Van de Kaa, 1996). This can be seen as a rejection of the universal role of socioeconomic determinants in fertility transitions. Researchers emphasizing culture dimension regard each fertility transitions as unique historical phenomenons. Fertility decline occur to people living under unique social arrangements and under certain combinations of historical and institutional circumstances which are unlikely to be repeated again in all its particulars (Mason, 1992). Research efforts were directed instead to find some general principles to clarify particular cases and produce a general understanding of the circumstances that are likely to bring about and sustain the transition.

There is no single and straightforward definition of what culture is but there are various conceptualizations dependent upon social science disciplines and approaches. In a simple manner, culture is assumed to be referring to the shared and transmitted beliefs and evaluations –a set of mental schemas- between generations. Culture supplies the normative and interpretive -or meaning-giving- rules, which means it provides definitions of social relationships and evaluation of individual behavior. Modes of production, intergenerational and gender relations, and marriage systems are reflected in culture (De Bruijn, 1999). In another way, society is defined by its institutionalization of particular cultural patterns (Reher, 1998). Culture and social institutions are seldom elaborated separately in demography; culture is taken as an identifier or content of the institutional context.

Hammel (1990) explain why cultural factors increasingly are integrated into demographic studies:

> "*Culture, it is claimed, may explain why communities or persons living under apparently identical economic conditions but differing in language and tradition often behave very different demographically. Culture may explain why the population of a geographical region or linguistic area continues to behave demographically in much the same way over time, even though economic conditions change. Culture may explain why demographic differentials between populations persist even as the level of some demographic measure for all them exhibits similar change over time. The use of culture as an analytic principle might elevate contextualization to higher level.*"

The reevaluation of the role cultural factors played in the fertility transitions has brought about discussions on conceptualization and operationalization of culture in demographic studies. Demographers usually employed cultural concepts in individual level analyses as independent variables, like with the socioeconomic characteristics. Several anthropologists, studying demographic subjects found this approach "*drastically oversimplifying*" consideration of culture (Kertzer, 1997). Anthropological critics stressed that demographers mostly have used an outdated version of culture concept.

Demographic studies do not take into account for instance the degree of individual autonomy in manipulating culturally produced norms and beliefs to their own preferences. Instead anthropologist perspective suggested that people *select* among alternative rules to justify their behaviors. That is to say, the cultural rules are not perceived as rigidly binding prescriptions but open to individual agents' manipulation. Cultural templates –interpretative schemas- are multiple and fluid that people draw on in a particular political and historical context. Thus, demographic studies should not take culture as simple, nominalistic and static explanatory

categories (e.g. traditionalism vs. modern) that do not fit the reality. Instead, contemporary anthropology accept all societies as inherently fluid and changing (Bledsoe, 2001). Likewise, Kertzer (1997) wrote that culture should not be viewed as a list of traits but rather as a continuously changing process interwoven with institutional structure and field of political power. Within this vein, Greenhalgh (1995) proposed a 'culture and political economy perspective' to illuminate mechanisms of demographic dynamics.

The criticisms eventually have made an effect in the demographic studies that field survey projects have increasingly been supplemented with anthropologic or ethnographic components. Some Demographic and Health Surveys (DHS) have qualitative research sections -focus groups and in-depth interviews-, wherein statements and explanations are elicited from respondents instead of only numeric and short-answer responses. These studies are often designed in relation to a standard DHS survey questionnaire so as to improve the way questions are asked and answers are formulated. Also qualitative research may provide contextual information and further help to interpret quantitative field survey findings. Thereby, the merits of this approach is stated as follows: "*It makes connections between theory and everyday events in research designs and emphasizes the ways that qualitative and quantitative approaches to the study of social interaction can complement one another. This strategy focuses on local terms, concepts and practices to achieve understanding, and explores the social and cultural contexts within which events occur"*. However, the motivations for these additions still leave towards the policy side rather than scientific contribution: "*the ultimate goal of this research is to inform policy and advise development programs that work with issues in health, population, and nutrition*[18]" (MEASURE/DHS, 2007).

The term "institution" is not uniformly defined but still a widely used concept in social sciences. McNicoll (2001) defined institutions as "*enduring clusters of behavioral rules, known but often unwritten, governing human actions and human*

[18] Among the aims of implementing qualitative studies those mentioned are "*to understand how groups and individuals accomplish certain tasks such as seeking treatment for a sick child, finding an effective way to delay pregnancy, introducing complementary foods to a young child who is breast-feeding, or finding ways to avoid infections from sexually transmitted diseases*" (MEASURE/DHS, 2007).

relationships in recurrent situations". Institutions are constantly being made and remade by individual's social contacts or sometimes by deliberate efforts at policy design. In demography, in the life course approach, social institutions are defined as connecting individual life histories with the influences of communities and social historical change (Elder, 1985). This perspective proposes that the individuals do not experience effect of the social environment as a whole but practice it with a series of interdependent life domains. The institutional approach is an analytic perspective[19], embracing diverse theories and proposing new research agenda for fertility studies (Greenhalgh, 1990).

Social institutions are guided by social norms, values and sanctions. They are significant social structures organizing societies in patterned manners. Individual demographic decisions and behaviors take place in a context that is formed by personal networks at the micro level and social institutions at the macro level. Institutions influence individuals setting the limits of alternative courses of actions; in other words, shaping constrains and opportunities.

The most widely recognized social institutions pertaining to demographic behavior are marriage, family and kinship systems, religious institutions, the education system, the health system, political organization –community and local government-, stratification system and mobility paths (class and gender specific) and economy (public transfers, labor market, employment of women etc.). The form and content of the connections between social institutions and demographic change depend on the social, economic, historical and political context (Hogan and Short, 2003, McNicoll, 2001).

The different family and gender systems among societies are frequently visited social institutions in demography literature. A family system defines a set of beliefs and norms, common practices and related sanctions about kinship and the rights and obligations of particular kin relationships. Living arrangements at different stages of the life course; the social, sexual and economic rights and obligations of individuals occupying different kin positions in relation to each other; and division of

[19] One of the earliest analytical frameworks in this vein is Davis and Blake's (1956) study wherein comparative sociological perspective utilized for fertility research.

labor among related individuals are defined by the family systems. A gender system identifies a set of beliefs and norms, common practices and associated sanctions through which the meaning of being male and female is maintained in the society. Also gender systems determine the rights and obligations of males and females of different ages and social statuses. Family and gender systems are intertwined institutions since all family systems are organized around gender and all gender systems demarcate the family and kin roles of males and females (Mason, 2001). These institutions have different attributes in different societies so much so that it is very difficult to make a unique 'marriage' and 'family' definition (Hajnal, 1965). The family and gender systems are affecting fertility levels and patterns not only across different societies but also across stages of fertility transition of a single society. Demographic studies with institutional perspective usually take into account the implications of modernization aspects for family structure rather than scrutinizing the behavior with micro-analytic models (Ryder, 1983).

Family and gender systems can have an influence on inclination of populations to undergo a fertility transition. Mason (1997b, 2001) argued that different historical sequence of fertility transitions across world regions can be partially explained with their family structure and gender stratification differences. The overview of literature she presented on the linkage between family/gender systems and the timing of onset of fertility transition can be summarized as follows.

In a pre-transitional population, how population would respond to a decline in infant and child mortality is determined by three intermediate institutional factors. Firstly, the number of surviving children that a family system can accommodate; if family and gender system able to bear a large number of surviving children then the pressure for birth limitation may not be so strong. Lineage-based, and hierarchically organized family systems may accommodate higher number of children than family systems characterized by household or conjugal units. The burden of caring for high number of children could be shared across the lineage rather than falling on the shoulders of single conjugal unit. Secondly, the onset and speed of mortality decline; insofar as fertility transitions depend upon child mortality decline, child preference favoring male children may likely to retard the onset of fertility decline. Because

couples continue childbearing until reaching designated number of male offspring. Thirdly, the availability and cost of postnatal forms of family-control; intentional child neglect, infanticide, child fostering, marrying children at an early age etc. is also important. The cost of postnatal control could be lower in family systems characterized by multi-generational households or lineages than in those organized around conjugal households.

The institutional differences of family/household formation, resulting in late or early entry into marriage, are suggested to be related to the timing of onset of the fertility transitions by Coale (1992) too. He, scrutinized the average age at first marriage and the time voluntary control of marital fertility by contraception initiated in European, former Soviet Union, India and some other Asian countries. He asserted a relation between (and within) these broad geographical regions in those areas in which traditional age of entry into marriage was late were the areas in which marital fertility was reduced first. He pointed out the social context –established social customs- as the reason for this association. For his interpretation, in the regions where late marriage was the norm women had relatively more autonomy and thus were freer to adopt control over their childbearing behaviors[20]. Conversely, those social customs like arranged marriages, payments of a brides' price or a dowry, promoting early marriage, were less conductive to the initiation of voluntary control of marital fertility. They might be inhibiting factors of especially the young married women's autonomous individual behavior.

An important theory about the role of changing family systems in fertility transitions is the 'Wealth flow theory', suggested by Caldwell in mid 1970s (1976; 1980). His argument has been considered "*a cultural demand theory of fertility decline*" (Mason, 1992). Culture in this elaboration was represented by the meaning of kinship and family (De Bruijn, 1999). Caldwell emphasized changing perceptions about the value of children –present and anticipated benefits over a lifetime- in developing countries, without establishing a connection with changing material or social conditions. Rather he argued that in the developing countries two forces

[20] The association is of course does not imply that late marriage causes universally early adaptation of birth control. Additionally, Coale did not test higher autonomy assumption in this study with any individual level data.

together altered values, beliefs and norms about family relationships and thereby precipitated the fertility transition. These two factors were change in the family economy and diffusion of the Western values.

Caldwell (1976) formulated two different contexts wherein economic rationality brings about different fertility behaviors. In the first situation, to maximize the number of children is economically advantageous; whereas in the second one, it is to minimize the number. In the former situation, reflecting that in most traditional societies, the direction of net wealth flow is from younger to older generations. The onset of fertility transition is then dependent upon the change in this economic motivation. This could be related to the weakening of kinship ties and nucleation of family institution. The nucleation of the family changes of direction the wealth flow from older to younger generations, and is thereby an essential condition of fertility decline. Socioeconomic structural changes and spread of universal education could be behind the alteration of family institutions (Caldwell, 1980). The mass education factor was stressed since it could fasten changes in family morality[21] -attitudes and motivations - governing reproductive relationships. Caldwell (1976) claimed that fertility would almost certainly fall to low levels in most developing societies as well -even where economic growth has been slow and per capita incomes remain low- due to the massive social change related to the nucleated family structure being expected from the West.

Following Caldwell's theory of fertility decline, Ryder (1983) suggested that modernization, as a force of demographic change, should not focus so much on fertility itself but rather on its influence on the system of family morality. He asserted that mortality decline had a disruptive effect on both the quantitative and temporal equilibrium within the traditional family. In this sense, modernization was seen as the force altering family relationships, i.e. the nature of intergenerational contract, at the core of traditional family morality. Firstly, the declining infant and child

[21] Within same vein, Freedman (1979) also held that the modern means of transportation and communication systems could carry new models of family and child parent relationships. These flow of messages – diffusion-, rather than the production of goods per se, can speared a culture of consumerism which would became driving force of in redefining the perceived cost and utilities of having children.

mortality level precipitate an increase in the ratio of sons to fathers. Secondly, lengthening of life expectancy at adult ages brings about a delay in the time of transfer of statuses and rights from the senior to junior generations. Therefore, the mortality decline is seen as a factor undermining foundations of high fertility in traditional societies. Additionally, Ryder (1983) pinpointed alternative institutions, conductive to fertility decline, related to children in which poor families might find confidence for protection during unemployment, illnesses and old age.

Much of the explanations by Caldwell and Ryder are pertinent to the onset of fertility transitions. Recent demographic literature, so as to understand pace of fertility transitions focuses upon variation and change in the institutionalized gender relationships in contemporary developing countries (Mason, 1986). In traditional agrarian social structures, characterized by low level of technology and productivity, capital of households consists of both agricultural land and women who represent not only their own labor but also production of future labor for the family. It is commonly viewed in the literature that in this social structure women have low status, little education and are highly segregated. The pace of fertility decline is expected to be slow since these characteristics may hamper benefits of having fewer children or any ideational changes about reproduction. High status of women contrarily is supposed to enable them to involve in social and economic affairs and obtain new ideas about fertility preferences and regulation means (Freedman, 1979).

As demographic studies increasingly have addressed the relationship between family systems, women's status in family, and fertility outcomes, several conceptual problems were noted in social demographic studies in the mid 1980s. The concept of women's "status", or position, was frequently mentioned with very different connotations in the literature (Mason, 1986). Alternative terms, like "gender inequality", "status of women", "sexual stratification", "female autonomy", "female dependency" and "male dominance" were often used interchangeably (Mason, 1987). Demographic studies typically failed to recognize the multidimensionality of women's status, distinguishing between individual and institutional factors, and its variation across social spheres in which women function (for example, between the domestic and non-domestic). There are also some generic problems in the

measurement of female status, like the sensitivity of particular indicators to social context, and the possibility of consistent comparisons when judging the extent of gender inequality (Mason, 1986). Such kinds of critics are seen to have had an impact eventually on comparative demographic studies based on cross-sectional data sources[22] (Kishor and Neitzel, 1996; Oheneba-Sakyi, 1999; Ying, 2002; Tfaily, 2004).

In her literature review Mason (1987) suggested that conceptualizations of women's status should be focus on the position of women in relation to men and concern should be given to power relations between the two sexes[23]. The scrutiny of her, regarding the developing country contexts, show the varieties of paths through which aspects of gender inequality influence fertility and intermediate determinants of fertility. In this vein, it is hard to find common and ever lasting associations for all social contexts. However, Mason (1987) supposed five general modes wherein women's status might influence fertility through child supply, child demand and child cost, as related to Easterlin's socioeconomic framework.

Mason (1987) stated firstly that women's autonomy is inversely related to age at marriage and therefore also to supply of children. Early or late age at marriage determines the amount of years in reproduction. Four intermediate institutions are related to how women's autonomy -freedom of action or decision making- could affect their fertility. These are; size of dowry[24], arranged marriages, women's desire

[22] Cross- sectional nature of data sources, like DHS, wherein measures of both fertility and particularly women's status are collected at survey time, causes a limitation of ability to test causations in the relationship between fertility and women's status (Tfaily, 2004). Women's status is typically measured with individual level variables such as level of education, employment status, independent source of income and control over earnings etc. At institutional level societal perceptions of gender roles and rights and obligations are less taken into account. Explicitly designed surveys to ascertain links between women's status and fertility on the other hand, enables to conduct multidimensional and multi-level statistical analysis (Oheneba-Sakyi, 1999).

[23] It is important to take into account power relations between husband and wife for example. Husbands, due to they supply all or partial family income, have greater power than their wife's and as a result they can bribe or coerce their wifes to comply with their demand in 'traditional' marriages. From a feminist perspective Chafetz (1995) define traditional familial authority, which makes binding decisions to all family members but especially for wives, as the mutually agreed upon right of husbands, sustained by religion, custom and law.

[24] Marriage transactions - bridewealth, dowry, indirect dowry, and so on - determines status of women since they are mechanisms by which households provide for labor needs, distribute property, and maintain or enhance their status. Presence and the absence of the marriage transactions have been shown to have a patterned distribution worldwide. The type of property controlled by the household is

and ability to work, and parent's desire to prolong daughters' employment. Secondly, she consider the settings where women desire to have fewer children than their husbands do or are more inclined to use fertility control methods. With increasing autonomy women can have a higher say in fertility decisions and be more likely to engage in innovative behaviors. These may in turn reduce demand for children and/or psychic cost of fertility regulation.

Table III.3.1. Primary paths through which aspects of women's social position may influence her fertility

	Women's Position	**Mechanisms**		**Fertility Outcome**
1	Low Autonomy	Importance of Early Marriage	Supply	High
	(If women want fewer children than men or favor fertility control):			
2	High Autonomy	Female Voice in Fertility Innovative Behavior	Demand or CFR*	Low
3	High Dependency	Son Dependency Children as Security Assets	Demand	High
4	High Autonomy	Opportunity Cost of Children	Demand	Low
5	High Status	Husbands Concerns for Wife's well-being	Demand	Low

Source: Mason (1987) (* Cost of Fertility Regulation)

Thirdly, institutions that sustain women's economic dependency to her kin, husband and children (especially sons) are relevant for fertility behavior. Under this heading Mason underlies the value of children which reflects some aspects of gender

as a major factor in determining type of marriage transactions. Bridewealth, circulating property and women, is more common in tribal societies and among the landless poorer classes with limited property. The dowry and indirect dowry, concentrating property and women, is found most common among the property-owning classes of landed or commercial pastoral peoples (Schlegel and Eloul, 1988).

inequality. There are four dimensions; value of children: 1. as insurance against divorce, 2. as securers of women's position in the family, 3. as economic or political value (source of labor, wealth, household help etc.) and 4. as "risk insurance," and source of economic support in case of widowhood and old age. Certain combinations of these values may produce stronger preferences for having sons and thus increase overall demand for children. Fourthly, high autonomy of women, in combination with higher level of education, may enable participation to in the labor market and, as argued in economic demand reduces for children due to higher opportunity costs of having children. Fifthly, higher status and greater equality between women and men would lead to higher considerations of women's health and well-being, which may lead to limitation of childbearing – or lengthening of birth intervals. Low autonomy, on the other hand, may be intensified by age and gender hierarchies, and women's autonomy could be at its lowest during the peak of childbearing years. This has considerable implications for demographic and health outcomes in terms of poorer child survival, slower fertility decline, and poorer reproductive health (Das Gupta, 1995).

III.3.a. Cultural dimensions of education and fertility relationship

As mentioned before, in both the cultural-ideational and socioeconomic approaches to fertility change the between education and fertility is one of the most frequently investigated topics. A negative association between women's education and fertility is a general finding of most studies conducted on developing societies. The mechanisms of this relationship are identified as delayed age at marriage, lowered fertility goals, and increased fertility control with rising education level of women. The effect of male education is found to be weaker -or in some cases even positive (Singh and Casterline, 1985; Martin, 1994; Muhuri et. al, 1994). Some researchers argue that men[25] who marry educated women are largely in agreement

[25] A review on the differences between women's and husband's reproductive goals in developing countries has shown in fact that the women do not consistently want fewer or more children than their husbands. In high-fertility settings, however, there is some tendency for women to express more pronounced desire to cease childbearing than husbands. Differences in the preference for sons are

with the low fertility desire of their wives. Thus, couples joint ability brings about smaller family size rather than such ability in women alone (Basu, 1999). Empirical findings show that the nature of the relationship, between education and fertility, depends on institutional structure of society.

Two decades of empirical literature suggests no straightforward relationship between women's education and her fertility level. The nature of the relationship is conditioned by national-level context, like presence or absence of mass education, the level of general socioeconomic development, the strength of family planning programs, employment opportunities of women, and existing gender relations (Singh and Casterline, 1985; Jejeebhoy, 1995; Diamond et. al. 1999). Four general patterns have been distinguished.

The first pattern, inverse relationship, where fertility falls monotonically with increasing level of education, characterizes countries that have both relatively high per capita income and female literacy and a changing socioeconomic context. This type of relationship is prevalent in more egalitarian cultural settings where gender disparities are low.

The second pattern illustrates a curvilinear relationship, reversed-U or reversed-J, shaped which indicates that a few years schooling increase fertility yet eventually fertility commence to decline with increasing education. The third one presents similar pattern as the first one though rather, the relationship is "seven-shaped". Due to a few years of education, the health of the mother improves and/or traditional fertility restraints, such as abstinence or breastfeeding, may disappear, before the desire for children eventually declines. As a result, the first few years of schooling may have either no effect or produce a slight rise in fertility. The negative impact of women's education on fertility emerges only after a minimum level of education attained. This setting is characterized by slow socioeconomic development and strong traditionalism (gender inequality). The fourth pattern is a positive relationship in which fertility rises monotonically with education, which characterizes countries with very low level of development. The evidences presented

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more common; husbands typically prefer sons more strongly than do wives which may help to explain small differences between the sexes in the desire for additional children (Mason, 1997b).

relationships are not static. The associations change with time and increasing development, from curvilinear to inverse ones.

III.3.b. Modernization of family-oriented institutions and low fertility

As we have seen above, in the developing country context, higher level of gender equity is seen as a necessary condition for fast fertility decline for various reasons. In fact, some demographers distinguish two types of gender equity with differential fertility outcomes in different contexts. These are gender equity in institutions and gender equity in the family sphere since the 1960s, women in developed countries have progressively asserted their individual rights, in education and market employment, to the extent that individual-oriented social institutions have become characterized by a high degree of gender equity too. Nonetheless, in some developed countries, like in southern Europe the family-oriented institutions are still characterized by a relatively low degree of gender equity. Interestingly, these countries are now characterized by very low fertility.

McDonald (2000a and 2000b) argues that one of the important causes of the very low fertility in some post-transitional countries is related to the incoherence between the levels of gender equity in different social institutions. The more traditional the society is in regard to its family system, the greater is the incoherence between different social institutions and the lower is fertility in these societies. Low gender equity is found in spheres like; the lack of support for women to combine paid employment and childrearing; welfare state's tax-transfer systems being based on the male-breadwinner model[26] of the family; and sustained gender-oriented roles within the family. Similar arguments are hold by Chesnais (1996): women are provided with opportunities nearly to equivalent to those of men in education and market employment, yet these opportunities are severely curtailed by having children. Therefore, on average, the women will decrease the number of children

[26] The social institutions founded upon an assumption of the male bread winner model of the family presumes that there is a natural differentiation between men and women that requires the husbands to be the provider and protector and the wives to be the care giver and reproducer (McDonald, 2000a).

they have. In order to ascertain this 'gender equity theory' of low fertility, we should look at historical developments of family systems and some case studies on the issue.

Hajnal (1965) defined historical distinctive marriage pattern for Western Europe –prevalent at least from the 18th century to Second World War. Essential features were relatively late age at marriage and a large proportion of people who never marry. Later, he suggested further distinctions in the household formation systems between northwest and the south west Europe. For him some shared features of the northwest would have contributed to development of industrial capitalism and of lower fertility. In Northwest Europe, characterized by simple household system, young people were often circulated between households as servants before marriage. Therefore, late marriage was common for both sexes, and married couple was almost always in charge of their own household (with the husband as head). Hajnal claimed that in these societies the institution of premarital servants was an essential part of the mechanism that adjusted fertility -and population growth- in response to the economic conditions during 17th and 18th centuries.

Mediterranean region of Europe, on the other hand, had other characteristics in terms of household formation and timing of marriage (Laslett, 1983). In the Mediterranean region household formed through the fission or fusion of existing households rather than formation of new neolocal domestic units. In the northwest Europe people became household heads by marriage whereas in the Mediterranean attainment of headship and marriage were largely independent events. While male age at marriage was high in both the northwest and the Mediterranean Europe, average female age at marriage was low in the latter region. Thus, the age gap between husband and wife was higher in the Mediterranean region. Lastly, the proportion of population who never married was low in the Mediterranean differently than in northwestern Europe. In fact, the historical Mediterranean pattern rather resembles to the joint household systems (i.e., those comprising more than one married couple) of many Asian pre-industrial societies (Hajnal, 1982). In the Asian type, however both sexes married early and marriage was generally arranged by

parents. The young couple usually joined the household of which the husband was a member[27].

The historical differences in the family structures are claimed to be persistent in fundamental manner contemporary Europe too. According to Reher (1998), the family structures in centeral and northern Europe, together with North America are marked with relatively "weak" ties, where individual values have priority. Children leave the parental home early and aging persons are seldom assisted by their children during their last years. Mediterranean region, on the other hand, is identified by relatively “strong” ties, and the family group has priority over the individual. The area is characterized by greater social cohesion and more effective social control of individual behavior. Children leave parental family at marriage, or sons bring brides into the parental home. When the neo-local residence rule is followed newly wed couples usually live near their parents. Parental help during childrearing is high, and parents are assisted by their children in their ages. Reher (1998) claim wrote that the way family structures and relationship manifests itself has implications for the way society functions. He did not establish a connection between family ties and reproductive behavior yet demographers work on plausible associations.

In line with the Second Demographic Transition theory (Van de Kaa, 1987), some researchers have suggested a convergence in basic demographic indicators of fertility, and family patterns in Europe. However, comparative studies have shown substantial country variation in family dynamics over the 1980s, although overall fertility may be similar (Kiujsten, 1996; Billari and Kohler, 2000). Individualization and pluralization of living arrangements are common, yet there are differences in the intensity of trend, and the way they manifest themselves in family life patterns.

According to some authors there are strong cultural and ideational factors influencing differential development of family life, and family policies in contemporary Europe. The slow institutional change is used to explain lowest low fertility in developed countries characterized by strong family norm[28]. South

[27] Some other researchers did not contend with such a sharp dichotomy between family formation systems, overriding the existence of internal differences, especially by social strata (Goody, 1996).
[28] The very low Japanese fertility is also explained with similar arguments. Japan has experienced impressive economic advancement and modernization but deeply rooted gender relations in society

European countries[29] share gender roles models embedded in social policies and welfare states and labor markets that impede women's labor-participation. The two prominent commonalities are 'family paradigm' in which care of the family is given responsibility of women and the male breadwinner-female housekeeper model with gender inequalities in the labor market. The legacies of this traditional system is based on the social history of the region and reproduced in modern times by four factors (Gonzalez et. al., 2000). Firstly, inflexibility in gender roles in labor market, women largely work without monetary rewards. Women do not only engage in the paid labor force less than men, but when they work they suffer from worse employment conditions. Obstacles are employment shortage and the vertical and horizontal segregation of occupations by gender. Second factor is, as a result of the fist one, the maintaining of female dependency on first father's and then husband's incomes.

Third factor is policies of 'women-unfriendly' welfare states. Welfare states in south European countries are less supportive to women's participation in labor market. For some authors, the welfare state policies are not only familist but also patriarchal in that they assume and reproduce women's dependence on men. Thus women are likely to receive financial protection from other family members rather than directly from state. Among the welfare state related reasons of the low labor force participation are deficits in child and elder care services to substitute women's traditional care-giving work. According to Addis (2000), Italian welfare state policies, considered women's work outside of the home until 1990s as "*a quirk, an exception, a private choice for women who had a very high earning capacity, and could indulge in both the traditional feminine role and the traditionally masculine one, with higher social status attached to later. It was assumed that the state had no duty to support such trespassing*". Fourth, substantial gender gaps persist in political participation in south Europe. The low participation in Spain for said to be not only

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have remained very salient. For some scholars, unless a drastic change happens in domestic relationships towards to equality between partners, policy interventions could not bring about a real increase in fertility level (Tsuya and Mason, 1995).

[29]When post-industrial, gender-egalitarian policies of most north European countries (e.g. Scandinavian countries) taken as model, where in both men and women encouraged for care giving and paid work, south European countries welfare state regimes are labeled as "*backward*" or '*less advanced*" in this respect (Orloff, 2000).

related to structural, situational, political dispositional factors but also intimately related to latent factors such as socialization process in gender roles (Morales, 2000)

Although the traditional gender order has been reproduced in the family, the labor market and the state in south Europe have been in rapid transformation as regards the role of women. In fact, the contemporary situation is defined by some authors as a transitional phase where different gender roles in traditional and modern spheres live together. This transitional phase is due to rising educational attainment of women and their increasing occupational expectations (Bettio and Villa, 2000). The primary outcome of this development has been delayed marriage and first births. Especially the highly educated women have been waiting until they consolidate their career which brings about less time for childbearing. Reducing fertility hence appeared a strategy for women to reconcile paid work and family life in these countries.

Several studies contended that, 'familistic' structure of family and society, in the Mediterranean Europe is the main explanatory factor accounting for its different fertility behavior (Micheli, 2000; Zuanna, 2001; Caldwell and Schindlmayr, 2003). The familism refers to social norms managing the relationships among members and generations within the nuclear family and kinship. For example, for Zuanna (2001) interaction of the familism with social processes could explain unexpected Italian lowest-low fertility[30] contrary to influence of the post-materialist values the second demographic transition theory suggested. He stated that familism indeed formed a sort of barrier against excessive individualism in Italy. Familism stipulates that the families should be defended –rather than substituted by other modern institutes and puts great emphasis on the responsibility of parents towards their children. It impedes participation of women into labor force[31] and highlights the traditional role of women in families. Zuana (2001) underlined that consumption expectations and aspirations have increased in Italy due to societal changes, resulting in a rise in child cost as argued by micro-economic fertility theories. Accordingly, the familistic parents opted for reducing the number of children in order to sustain high quality in

[30] The "*lowest-low*" refers to fertility level below 1.3 children per women (Billari, 2005)
[31] Half of the Italian married women aged 20-49 were found as housewives at the time of Family and Fertility Survey in 1996 (Zuanna, 2001).

their families. Likewise, late departure of young Italian adults from the parental home is explained with better economic conditions and affective bonds between parents and children at parental home than living alone. New post-materialist values infiltrated by familistic norms led to reduced fertility as a way maintain the strong-family institution.

Salvini (2004), following this institutional explanation, added that the 'ideal' family model has not been undermined in Italy and marriage has not been replaced with cohabitation like in northwest Europe. One reason of very low fertility of Italian women, for her is the difficulty of combining non-domestic work with a large family. At first, a 'delay syndrome' of marriage stem from strong financial and organizational restrictions in labor market. Young people who live in a context of strong family ties do not rush to exit from the family of origin and establish a union with uncertainties about the future.

Secondly, she stresses the differential change in social institutions; where rapid modernization and secularization brought about a relatively liberal environment for women outside the domestic sphere. Nevertheless, gender relations in the family institution remained static and men do not make significant contribution to domestic tasks like looking after children. Within this polarized context, an increased age at marriage and lower fertility became reconciliation strategy of working life and motherhood for young Italian women.

The Mediterranean Europe social institutional context aggravates the inverse relation between women's labor force participation and fertility. However, neither the difficulties of combining work, marriage and children, nor gender differences are peculiar only to the south European context. In West Germany, an empirical investigation of life histories of women showed a similar picture (Huinink and Mayer, 1995). However, new 'egalitarian' union formation patterns seem to diffuse faster in north Europe probably because social norms and traditional orientations of gender roles are more egalitarian. Women's participation in the labor force is much higher in north Europe yet gender differentials in education and occupational choice persist. What differentiates the Scandinavian countries may be their strong institutional support to gender-equity since the 1960s and 1970s by public policies.

Some these incentives are paid parental leave with job security, the ability to reduce hours during the first years of child rearing with job protection, taxes based on individual instead of family income and state subsidized day care (Hoem, 1995). The incompatibility between work and family life is found to be hampering factor of women's fertility decisions in some northwestern countries too. Usually the inadequacy of institutionalized childcare support is emphasized other than gender equity in domestic unions (Kreyenfeld, 2004).

III.4. INNOVATION AND DIFFUSION APPROACHES

The early demography literature stressed the role of non-economic factors in the transition process beside the socioeconomic ones when explaining the historical fertility trends in Europe from 19th century to 1930s (e.g. Carr-Saunders 1936/1964 or Kirk 1946). The subsequent theoretical frameworks, like classical demographic transition theory and economic perspective to fertility decline, gave higher primacy to socioeconomic development factors. These theoretical examinations shared some views. First, fertility behavior is seen as outcome of a 'rational' decision making process. Second, the behavioral change –fertility decline- is largely attributed to consequence of a mortality decline and subsequently declining parental demand for children. Third, changes in the economic costs and benefits entailed in childbearing are accepted as reasons of the decreasing demand for children. These explanatory perspectives can be seen as *structural explanations* of fertility transitions since they stress the economic and social transformations that alter the social context wherein childbearing took place (Polloni, 2003).

Nevertheless, empirical researches on both historical and contemporary populations have challenged these explanations (Cleland and Wilson (1987). Structural changes and the timing and pace of fertility decline were generally found only loosely correlated (Bongaarts and Watkins, 1996). Combinations of social and economical factors, enacting in fertility transitions, have been different from one society to another (Reed et. al., 1999). As structural explanations have lost preeminence, new lines of researchs began to appear. This quest for finding better explanations has pointed to the role of non-socioeconomic factors in fertility transitions.

One common alternative explanation in demographic literature is based on diffusion paradigm as *diffusion-based* explanations (Pollani, 2003). The term diffusion, in general, connotes "*the socially mediated spread of some practice within a population"* (Strang and Meyer, 1993). Diffusion is widely studied in both natural and social science (Pollak and Watkins, 1993). Sociological studies, for example, treat diffusion as a relational phenomenon because it progress with effective

communication; especially contacts between prior and potential adopters within populations. Thus, diffusion process is shaped and accelerated by cultural, geographic, or temporal similarities. The diffusion is supposed to be particularly rapid where forerunners and potential adopters fall into same or similar social categories (Strang and Meyer, 1993).

The theories of diffusion do not disregard rationalities involved in the process under study (Pollak and Watkins, 1993). Learning from the experiences of others per se is a process wherein actors jointly construct an understanding of the appropriateness of some practices. There are some basic institutional conditions facilitate rationalities in diffusion process. These are can be mentioned as consistency of the new with prior attributes, the simplicity with novelness of the new practice and opportunities for experimentation (Strang and Meyer, 1993).

The diffusion approach to fertility decline suggests essentially that the fertility transition cannot be viewed simply as an adjustment process to changing socioeconomic circumstances. The diffusion factor can account for a unique portion of the variation in the timing and pace of fertility declines (Reed et. al., 1999; Casterline, 2001b). Diffusion process may change two of the three preconditions of fertility transition proposed by Ansley Coale: First, diffusion process can be conducive to alter individual's mind that birth control can be "within the calculus of conscious choice". Second, it may provide individuals to couples means of birth control facilities (Lesthaeghe and Vanderhoeft, 2001).

III.4.a. Two versions of the diffusion theory

In the family planning context the diffusion commonly refers two phenomenons. First one refers to spread of new technologies, ideas and behaviors, concerning knowledge, attitudes and practices of contraception, and second, ideas about benefits and costs of childbearing (Cleland, 1985). There are two kinds of diffusion based theories wherein the preeminence of diffusion changes; 'blended' versus 'pure' diffusion theories (Reed et. al., 1999). The blended version of diffusion

theory holds that the fertility transitions can be attributed to both structural changes and diffusion. In this understanding whereas structural transformations are seen as the real engine of fertility decline, diffusion serves as a lubricant of the overall process.

The pure version of diffusion theory posits instead that fertility regulation behavior can spread and be adopted in societies irrespective of certain social and economic changes. In this paradigm, individuals form their own choices in the light of other people's behavior which does not necessarily mean a strategic response to change in surrounding changing socioeconomic conditions. There are two closely linked key elements in diffusion theory; "*innovation diffusion*" and "*diffusion process*" (Casterline, 2001b).

According to innovation proponents, modern fertility decline appears due to progressive spread of innovative fertility regulation. This more emphasizes spread of new behavioral innovations, that is to say usage of certain types of birth control techniques or technologies. Scholars involved in the European Fertility Project argued, for instance, that birth control was an innovative behavior in historical European societies[32] (Knodel and van de Walle 1979; Watkins, 1986). According to their findings, once diffusion of practice of family limitation was under way in Europe it turned out an essentially irreversible process and resulted in the decline of marital fertility.

The spread of this behavior was typically supposed to begin in metropolitan areas and then reached with some delay other urban centers and latest to rural areas. Different combinations of regional cultural characteristics and socioeconomic features played critical role in the process and certain regions more quickly reacted spread of the innovative behavior. Additionally, upper and middle classes were supposed to be leading, and manual workers and rural population to be laggards in the diffusion. However, some researchers questioned these assumptions. It was argued presented for instance for Sweden that the fertility decline needs to be

[32] Knodel and van de Walle (1979) argued that for European societies that "*we see no reason to believe that withdrawal was acceptable or even known before the onset of fertility decline, or that it can be "reinvented by every couple" when need arises"*. However, they conferred that references to withdrawal in Islam abounded from medieval times.

treated within a wider sociological perspective of change, not necessarily starting from a position of completely uncontrolled fertility within marriage (Carlsson, 1966). Likewise, Cleland and Wilson (1987) argued that even though natural fertility was predominant in most pre-transition populations the practice of abstinence or other traditional methods might have been prevalent in some pre-modern societies. Innovation should be interpreted largely in the moral sense, rather than in the form of new information of birth control methods (Reed at. al., 1999).

The moral innovation interpretation fits by the second key element of the diffusion process, which stresses the spread of novel ideas as underlying cause of fertility transitions. The theories using this element are called "*ideational theories*" and the basic argument being that fertility decline occurs due to spread of emerging attitues and values about family planning and ideas about family. Thus notion stipulates that the relatively autonomus spread of information and values about fertility regulation are the primary causal forces of the contemporary fertility transitions.

However, that cultural and ideational change can bring about considerable fertility decline as being detached from larger socioeconomic change has found unsatisfactory emprical support (Casterline, 2001b). Lesthaeghe, for instance, argued that secularization and individual authonomy and self-actualization indeed could explain considerable part of fertility decline and differentials in the 20th century west Europe (Lesthaeghe, 1983; Lesthaeghe and Surkyn, 1988). He argues that present dynamics of fertility and family life actually is a continuation of a long historical process characterized by shifts in the Western ideational system. Similarly, Caldwell examined fertility decline in contemporary developing countries and attributed causal power to spread of Western ideals about family life through increasing schooling and mass media in these countries (Caldwell, 1980). These two authors nevertheless did not totally discharge changing socioeconomic structure effect from their analysis.

Similarly, Bongaarts and Watkins's (1996) analysis of fertility transitions in 69 developing countries since 1960 argued that socioeconomic development – measured by the Human Development Index - is important in understanding the timing and pace of fertility change. However, the diffusion via social interaction is

likely to have an independent influence on fertility. Once the fertility transition initiated in one region, at certain socioeconomic level, diffusion process progressively reduce treshold of development necessary for the onset of transition in neighbouring regions. They also held the view that the pace of fertility decline in contemporary transitions was primarily related to the level of development when the transition began rather than during the whole course of decline.

Essentially fertility research with diffusion components has arisen essentially from two sources. First, from the re-inquiry[33] of the first fertility transition in pre-industrial Europe, Knodel and de Walle (1979) suggested that fertility declines in Europe took place under a wide variety of social, economic, and demographic conditions and that cultural setting influenced the onset and spread of fertility decline independently of other factors. Lesthaeghe's study (1983) on west Europe's century-old fertility transition supported confirmed this finding. Western Europe showed clearly distinguishable fertility levels and patterns along language borders for communities which were otherwise very similar in socioeconomic characteristics.

According to Watkins (1986) there were two key conclusions of the European Fertility Project. First, the fertility transition began at widely varying levels of socioeconomic development. Second, once a decline began in a region, neighboring regions with same language or similar cultural features followed after short delays, regardless of their development level. The pace and pervasiveness of the declines suggested that a mechanism of diffusion should have been involved and that socioeconomic conditions were weak predictors of fertility transition (Watkins, 1987).

Second type of conclusions from studies conducted on unfolding contemporary fertility transitions in developing countries. As early as mid 1980s, the findings of World Fertility Survey (WFS) conducted during between mid 1970s and beginning of the 1980s in 41 developing countries, brought about similar evaluations about fertility decline. Cleland (1985) purported that "*There is no easily identifiable threshold of societal modernization or intensity of organized government efforts to*

[33] This attempt initiated after the European Fertility Study's surprising outcomes and of the classical demographic transition theories observed weaknesses (see Section III.1)

popularize birth control, beyond which declining fertility inevitable". Rather, the fertility decline was found synchronous across socioeconomic strata in some countries so much so that national fertility differences could not even be attributed to differing occupational or rural-urban compositions. Therefore, according to Cleland (1985), whereas effect of structural change might have been the essential precursor, explanation of the speed and character of the trend must have been sought for change in social –sociological- or psychological elements; such as aspirations, knowledge, attitudes or social norms.

Some other studies on less develop country contexts brought about similar findings and pointed at diffusion effect as immediate causes of reproductive change. From the early 1960s to mid 1980s, the total fertility dropped so dramatically in Thailand that the country experienced the third largest decline reported among developing countries in that period. Underlying the rapidity of this change, researchers stressed the distinctive features of Thai culture (Knodel et al., 1986). The main cultural factors, that possibly facilitated the spread of small family size norm in the absence of strong socioeconomic development, were identified as higher status of women in society, stress of secular attitudes towards worldly matters in Buddhism, and openness to individual responsibility.

III.4.b. The role of social interaction

The diffusion approach to fertility transition highlights the importance of certain social mechanisms in a population that lead to cumulative adaptation of fertility regulation by individuals. According to Bongaarts and Watkins (1996), social interaction plays a key role in diffusion process in three ways. First, social interaction eases the exchange of information and ideas about fertility control among individuals. Day-to-day conversation among individuals, who are similar to each other in terms of socioeconomic and cultural characteristics, spread information about modern contraception and enhances small family size preferences. Secondly, social interaction also produces the joint evaluation of meaning in a particular

context. Therefore, it assists individuals to contextualize new information and ideas about fertility regulation. Thirdly, social interaction could promote constrains or encouragement for new action via social influence. Individuals usually modify their behaviors –or preferences - as taking into account approval or disapproval of important others (their peers or reference groups or those in positions of power over them).

Bongaarts and Watkins (1996) additionally claimed that social interaction does not operate randomly. Individuals exchange and evaluate information and ideas, and exert and receive social influence through three prominent channels. Firstly, importance of the personal networks, connecting individuals at micro –local- level was highlighted. Much of the discernible social interaction occurs in the context of personal networks on a day-to-day basis. The concept of diffusion at this level offered to be separated into two components by other demographers as 'social learning' and 'social influence' (Montgomery and Casterline, 1996). Empirical studies presented how social learning influential is in preference formation and decision making process. Individuals observe "normal" behavioral patterns related to family building and situate themselves vis-à-vis their social environment via their day-to-day (or occasional) contact in kin or non-kin groups (Bernardi, 2003). Likewise, social influence is associated with sanctions and rewards when an individual opt for to behave in certain manner. The influential power of 'others', usually notable persons -like elders in patriarchal family setting- , might be conductive to implement certain fertility behavior.

Secondly, Bongaarts and Watkins (1996) mentioned national channels of social interaction; such as the routes of economic activities (e.g., migration), or actions of governments (e.g., communication and transportation infrastructure) or cultural integration (e.g., language and ethnicity), connecting social and territorial communities within a country. They emphasized that fertility declines may be slower if channels of social interaction are unevenly integrating some communities into the national society and isolating others. Therefore the distribution channels of social interaction (or integration) may explain frequently observed regional differences in fertility level and patterns within a country.

Later as ascertaining the historical west Europe fertility transition, Watkins (1991) further developed this idea as stressing importance of the national channels of social interaction. She illustrated that, from the late 19th century to mid 20th century demographic diversity within national borders was lessening, while variation in demographic patterns among countries hardened. This strengthening of national demographic boundaries was referred to as "*demographic nationalism*" (Watkins, 1991). As regards, her interpretation, distinctive demographic boundaries, were not an outcome of deliberate population policies of countries. Rather, they appeared whith the formation of national communities, which paralleled the integration of national markets, state expansion and nation building.

One critical indicator was the progressive increase of linguistic homogeneity in most west European countries. During the course of linguistic homogenization, a single –official language- came to dominate regional languages and the proportion speaking the most prevalent mother-tongue substantially increased[34]. Decline in local languages and the decline in specific attributes of demographic behavior went together, indicating expansion of community from local to national. Schooling was particularly important in accounting for the domination of a standard language. A standard language, *lingua franca*, was an advantage for those involved in the dense networks of commercial exchange in modern economy and politics. Watkins did not conduct a conventional individual level analysis to scrutinize effects of these macro societal changes. Nevertheless, she held the view that increasing social interaction provided social integration of local communities to a higher level unity and that, for her elucidation, must have been the driving force behind the fertility transitions in west European countries.

[34] The main linguistic outcomes of the prolonged contact of ethnic groups within a modern nation-state could be language maintenance, bilingualism or language shift. The different outcomes arise from language policies that regulate the interactions of ethnic groups within a nation-state. In ethnic nationalism especially official language becomes prima symbol of a nation. (Paulston, 1992). Watkins here did not imply language shift outcome but pinpointed increasing bilingualism in west Europe national states. Despite the decline in linguistic diversity mother-tongues, other than the standard language still remain in these European countries. For instance, Welsh or Celtic in the United Kingdom, French in Italy, Danish and Frisian in Germany, Dutch and Breton in France, Lappish in Norway, Sweden and Finland, Basque and Catalonian in Spain and France (Watkins, 1991).

Other contemporary researchers have argued about social interaction effects on changing fertility behaviors. Empirical research in South Nyanza in Kenya found that social networks indeed could affect individuals' contraceptive decisions. While social learning was relevant in high market activity areas, in regions with only modest market activity social influence was the dominant impact on women's contraceptive use (Kohler et. al., 2001). Another example in this vein; Basu and Amin (2000) compared fertility and social change in Bangladesh and the West Bengal in India. They emphasized education and modernization effect on Bengali speaker elites in the two regions and the fact that the strong sense of language identity has facilitated and reinforced the diffusion of modern ideas both within and between the two Bengali-speaking regions. Therefore, the cultural commonality through language facilitated the spread of new ideas across the two Bengals and enacted reciprocal diffusion and strengthening of new fertility behavior[35].

Bongaarts and Watkins (1996) thirdly stated that the pace of global fertility transition was likely to be influenced by proliferation of global channels such as international migration, trade and international organizations, connecting nations within the global society. The role of globalization in worldwide fertility transitions since 1960s was indicated by Caldwell (2001) as well. He underlined the fact that between the late 1950s and the late 1970s fertility began a persistent fall almost simultaneously in most of the developing and developed countries. According to Caldwell, in fact, any revisions in demographic or fertility theories should take into account and try to explain the simultaneity of this almost universal decline. He proposed some commonalties pertaining to global fertility decline. First, after the World War II there have been increasing awareness and anxiety about fast population growth in both industrialized and developing countries. Penetration and legitimization of modern contraceptives quickened the fertility decline that would otherwise have happened more slowly. Secondly, the fertility also started to decline in indigenous minorities. Thirdly, the fertility attitudes and behavior began to diffuse during 1960s and 1970s by direct or indirect initiative of the global actors such as multinational corporations, UN agencies, foundations and so on. Fourthly, population

[35] In this case, the diffusion process is seen to be strengthened relationships between two local regions rather than establishing diverse ‘demographic nationalisms’ inside the Bengal and India.

activism of the developed countries towards the developing regions had influence in these countries themselves. Caldwell (2001) noticed that "*the first countries to experience the fertility decline were those that had been most active in its promotion: The United States, the other English speaking countries of overseas European settlement, Scandinavia and Netherlands*".

An example of globalization effects can be given from the Southern shores of the Mediterranean Basin where fertility decline has been underway are different extent in each country of the region since 1960s. Comparative studies have shown that at the onset of the fertility transition the socioeconomic development level of Egypt was higher than in Morocco. However, the fertility transition commenced earlier in the latter country and underwent with faster pace. Courbage (1995) underlined a complex mix of several factors that might have lead to the differential tempo between these two countries. Apart from the effect of changing fiscal systems in national economies, he pointed out plausible role of international migration as factor driving macro determinants of fertility transition. The destination for the Moroccan migrants has been the Mediterranean countries of Europe whilst the Egyptian migrant workers mostly moved to the Arabic Peninsula's oil rich countries. For Moroccan migrants, propensity to embrace small family norms and values has been stronger than for Egyptian migrants. In this manner, international migration is seen as a conveyor of small family preferences. On the other hand, Courbage (1995) called Egyptian emigrants as "*unwitting carriers of pro-natalist values*" predominating in Gulf societies.

Bongaart and Watkins (1996) stated lastly that the socioeconomic development is a potent factor as well since it changes the costs and benefits of children. Additionally it multiplies the channels of the social interaction as more people participate in exchanges through local, national and international channels. Nevertheless, the socioeconomic development is not sufficient to explain observed variations in timing of the onset of transitions or in variations in their pace. Diffusion effect should be taken into account in the explanations of these two phenomenons. Although at the beginning, social interaction may restrain change in the fertility behavior, once innovative fertility behavior has been adopted by a group of

individuals in a community or by a community within a country or by few countries in a region, social interaction can be a powerful force that accelerates the pace of transition.

The majority of researchers, we may claim, lines towards agreed upon Bongaart and Watkin's 'blended' version of diffusion theory. The workshop report on 'the role of diffusion process in fertility change in developing countries', collecting wide range of views and experiences of 22 researchers, concluded with following statements (Reed et. al., 1999): "*It seems clear that diffusion contributes to the determinants of the timing and pace of fertility change. While it may be impossible to separate the effects of diffusion from effects of structural change on fertility transitions, the available evidence indicates that both effects exist and, indeed that they usually reinforced one another*".

Innovation and diffusion based explanations of the fertility transitions have succeeded to collect rich body of concepts and theoretical explanations in the last two decades. Nevertheless, lack of data that would support rigorous empirical testing of theory is an important predicament of the further development. The worldwide data collection efforts, like the World Fertility Surveys and Demographic and Health Surveys, have so far provided very little specific data for testing diffusion assumptions. Cleland and Wilson (1987) argued that this lack of interest or implicit rejection arise from ideological preferences of the dominant data collection centers. Most of the diffusion explanations rely upon indirect evidence sometimes or rather referring simply to "*what is left over"* after considering measurable socioeconomic conditions effects (Pollani, 2003). According to Casterline (2001b) to test innovation and diffusion assumptions one needs different survey designs than what is prevalent in the field. He pointed out some areas on which data collection efforts should be directed:

1. *Measurement of social exposure, including some of the followings: informal social interaction with kin, friends, neighbors and work mates; formal social interaction with program agents (health and family planning workers, school teachers); and mass media exposure*

2. *Measurement of individuals' perceptions of the attitudes and behaviors of other persons*
3. *Prospective data collection, so that social exposure and perceptions at earlier times can be related later attitudinal and behavioral transitions.*

There is still a lack of knowledge on "*how information is conveyed in the social environment and how the messages are organized and interpreted and ultimately lead to behavior*" in the field of demography (De Bruijn, 1999). Perhaps along with better quantitative data, the incorporation of more anthropological and sociological approaches into quantitative research can contribute to clarify these mechanisms (e.g. Bernardi, 2003).

III.5. ETHNICITY AND FERTILITY IN DEMOGRAPHIC STUDIES

III.5.a. The ethnicity concept in demographic studies

Although modernization theories predict declining strength of ethnic attachments with socioeconomic development, ethnic groups continue to be significant elements in most societies (Rallu et al. 2006). There are different sources of persistence of ethnic groups; for instance, ethnic ties may provide protection and enhancement of statuses in some contexts. In times of sharp urbanization and societal change, ethnic belongings may offer a mode of reintegration into existing population structures and can constitute an identity against anomie and alienation (Yinger, 1985). There is an increasing popular, political and academic interest in the nature and consequences of ethnic loyalties (or collective identities), against contemporary national or supranational allegiances. Since the beginning of the 1970s, the rise of "multiculturalism[36]", has created a pressure on many national state countries to pay attention to the ethnic structure of their populations (Kertzer and Arel, 2002).

Demographic studies have been interested in ethnicity for various reasons. The immediate intention has been to study the relative size of ethnic groups, their growth over time, and their socioeconomic characteristics in association with population processes. In this vein, ethnicity is one of several sub-groups of a population, like sex, age, marital status, socio-economic status etc. Ethnicity is considered as one of the markers that give identity and cultural affiliation of persons in a population: "*Depending on national circumstances, cultural diversity may be measured by language spoken in the home or community, religion and national and/or ethnic group*" (United Nations Statistics Division, 1998).

However, studies on ethnicity in population sciences may not be driven solely by descriptive purposes. Ethnicity is an important factor due to fact that in many

[36] Multiculturalism is a political understanding stipulating that national populations are composed by different 'cultures' each deserving equal and sometimes special respect and aid (Kertzer and Arel, 2002).

cases ethnic divisions marks different demographic regimes. The ethnic groups may have distinct social, economic, cultural and political life experiences that may lead to variations in demographic behaviors[37] (Saenz and Morales, 2005; Rallu et al. 2006). Therefore, conducting comparative studies on particular ethnic subgroups can enhance the understanding of causes and consequences of observed demographic dynamics and processes (Frisbie and Bean, 1978).

Ethnicity is a concept not easy to define and existing definitions usually refer to several concepts and theories. Bulmer (1996) defines ethnicity as follows: "*An ethnic group is a collectivity within a larger population having real or putative common ancestry, memories of a shared past, and a cultural focus upon one or more symbolic elements which define the group's identity, such as kinship, religion, language, shared territory, nationality or physical appearance. Members of an ethnic group are conscious of belonging to the group*". There are different defining elements of ethnicity; language, religion, race and ancestral homeland, etc., yet none of these alone demarcates an ethnic group. In addition, several social science studies emphasized "*ethnicity is situational, emergent, adaptable, durable through flexibility and instrument in economic and political struggles*" (Yinger, 1985).

For some authors, a distinction should be made between: *ethnic group*, *ethnic identity,* and *ethnic category* (Kunstadler, 1979). Ethnic group means a set of individuals with similar consciousness and mutual interests centered on some shared understanding or common values. Ethnic groups often organize some of their behaviors to maintain their perceived mutual interest. Ethnic identification, on the other hand, refers to the process of assigning an individual (including oneself) to a group or category that may influence relationship within or outside the group. The ethnic characteristic is fluid; an individual may aspire to identify himself with a group, or some attributes attached to that group, to enjoy prestige and may modify his behavior to achieve this end. Membership of an ethnic group is therefore subjectively meaningful to the person concerned, which should be the principal basis

[37]For example, ethnicity can be important factor not only in fertility but also in mortality area: despite overall improvements in health conditions in some developed countries, differences by ethnicity remain remarkable and consistent over time (Sandefur et al., 2004). Ethnicity is also seen as a networking factor at the point of origin and channels of information at point of destination in migration studies (Rallu et al. 2006).

for ethnic categorization (Bulmer, 1996). Lastly, the term ethnic category refers to classes of people or groups, based on real or presumed cultural characteristics. This categorization implies a more or less systematic application of some rules to the variety of known individuals or groups.

Although ethnicity is conceived as a boundary with both symbolic and social aspects that shape individual's actions and mental orientations towards others (Alba, 2005), we should be aware that role ascription in a society cannot be confined exclusively to ethnicity. Age, sex, marital status, etc., and their various associated patterns of interactions determine an individual's domains of activity too (Kunstadler, 1979). Individuals or groups may play different roles in different contexts and ascription of identities may change over time.

Despite that ethnic identity cannot be reduced to a single indicator, language is often treated as a potent marker in establishing a group's boundaries. This was closely related to the rise of nationalism and national states since the mid 19th century. As the legitimacy and operation of the modern state progressively increased, 'official' (or dominant) language turned out to be pillar of political 'nations' or a language turned out to be decoder *of nationality* (Arel, 2002). At the late 19th century, language groups were located at the core of territorial debates among multinational states and language questions were already included into censuses.

There are three types of language data that can be collected in censuses, namely (United Nations statistical Division, 1998):

1. Mother tongue, defined as the language usually spoken in the individual's home in his or her early childhood;

2. Usual language, defined as the language currently spoken, or most often spoken, by the individual in his or her present home;

3. Ability to speak one or more designated languages.

Most censuses[38] have employed either one or two of these questions and sometimes the fluency of language ability has also been investigated. The most politically controversial debate over language has referred to the first two language questions. Nationalists have been in favor of collecting language characteristics in the first form, which determines ethnic belonging of individual's from their parents and ancestors. A strict definition of ethnicity based on only mother tongue leaves less room for fluidity of ethnic identities. The second category, language which respondent thinks to master best, as being a marker of ethnic identity acknowledges that ethnic identity may change in one's lifetime and/or through generations. Which kind of language definition is accepted as a marker of identity has been a matter of discussion among different interest groups (Arel, 2002).

In demographic studies in some multiethnic countries the ethnicity and race categories have been used together, sometimes in a confusing manner. Race[39] as a concept was created in nineteenth-century Europe as a Darwinian way to describe human diversity. In general, while ethnicity refers more to behavioral or cultural attributes, race stands for physical characteristics of individuals. Modern science has discredited this definition of race as a meaningful biological concept (Hirschman, 2004). Race is also a controversial term because of political misuse of the concept (Bulmer, 1996). Race is now conceived as a concept that stands for a human group that defines itself, or is defined by others, as different from other groups by virtue of some innate and immutable characteristics. That is to say, it is not physical characteristics themselves but the social definition of them that determines the definition of race (Frisbie and Bean, 1978).

Race and ethnicity are used interchangeably in the public, media, and among politicians and scientists in some countries (Morning, 2005a). Groups defined as ethnic in some countries may be labeled as races in some others. For example, Great

[38] In a recent study, based on one percent sample of 2000 Census of Great Britain, respondents are categorized into three classes; a) monolingual speakers (those speaking English at home) , b) bilingual speakers (those speaking a language other than English at home and who speak English "well" or "very well"), c) monolingual non English speakers (those speaking a language other than English at home and who speak English "not well" or "not at all") (Saenz and Morales, 2005).

[39] The word race came from the late 15th century Spanish designation for Jewish and Muslim origins, with belief that such people embodied an innate, permanent and negative essence (Morning, 2005b)

Britain used six pre-coded and one open ended categories for *ethnic* groups in the 1991 Census: *White*[40] */Black /Indian /Pakistani /Bangladeshi /Chinese /any other ethnic group* (Bulmer, 1996). Census and surveys in the United States ask respondents to identify themselves with one or more racial groups which are categorized into six major *race* groups afterwards: *White/ Black or African American /American Indian and Alaska Native /Asian /Native Hawaiian and Other Pacific Islander /Two or more races* (U.S. Census Bureau, 2007).

The concept of ethnicity emerged after World War II, and now has replaced the concept of race in most of the multiethnic countries (Kertzer and Arel, 2002; Rallu et al. 2006). Despite that both race and ethnicity refer to beliefs about common origins; ethnicity is stronger grounded in the discourse of cultural similarity (Morning, 2005a). The contents of both race and ethnicity vary across place, time, and situations and even intergenerationally over life courses of individuals. For example, "*groups once considered neither "white" nor "black" such as Irish, Lebanese, and Syrians in the United States as well as Chinese in Mississippi have gained acceptance as "whites" over time*" in the United States (Saenz and Morales, 2005). Minority group members whose parents are from different groups may alter their preference for racial or ethnic identities over time too. Despite its invalidations, the race concept has remained an important social category in the demographic literature in some countries because of historical tradition.

Censuses are important as official data sources. The criterions of race or ethnicity vary among countries, data sources –census, official registration, or surveys- and research purposes of the information collected. Some commonly used criterions are; nativity, naturalization, citizenship, country of birth, language spoken at home, mother tongue, parent's country of birth, in conjunction with country of birth and skin color (Bulmer, 1996; Leridon, 1999; Saenz and Morales, 2005). In this regard, data collection is important as well as design of questionnaires. Self-declaration of ethnic characteristics that give freedom to respondents to define

[40] Political discomfort in using 'race' in Britain led to a shift ethnic terms. However, the categories of the 1991 Census became an amalgam of racial and ethnic categories, which reflects political debate over the issue (Kertzer and Arel, 2002).

themselves is the best data collection method. Declaration by interviewer or from e.g. identity card, passport may instead lead to biased data (Rallu et al., 1996).

In the *'Principles and Recommendations for Population and Housing Censuses'* the United Nations Statistical Division (1998) brings to fore the difficulty of proposing a common, cross-national approach to ethnic enumeration:

> *"The specific ethnic and/or national groups of the population which are of interest in each country are dependent upon individual national circumstances. Some of the criteria by which ethnic groups are identified are ethnic nationality (i.e., country or area of origin, as distinct from citizenship or country of legal nationality), race, colour, language, religion, customs of dress or eating, tribe or various combinations of these characteristics. In addition, some of the terms used, such as "race", "origin" or "tribe", have a number of different connotations. The definitions and criteria applied by each country investigating ethnic characteristics of the population must, therefore, be determined carefully and with the involvement of or consultation with representatives of the groups which it desires to categorize. By the nature of this topic, these categories and their definitions will vary widely from country to country; therefore, no internationally accepted criteria are possible."*

A review on ethnicity variables in the 2000 Round of Censuses in different countries shows considerable heterogeneity in ethnic enumeration (United Nations Statistics Division, 2003). Delimitation of ethnic groups was usually not well defined and in some questionnaires ethnicities were defined with combinations of two or more categories. Questions were brief and direct, treating ethnicity as an objective individual characteristic to report. In most cases, the question was the same: 'To what ethnic group does (the person) belong?' However, the categories in answers could refer to a variety of concepts, such as race, nationality, indigenous groups or a combination of two or more of these.

Another similar review was done by Morning's (2005b). Her cross-national study reveals that among the 138 national censuses of the 2000 round, 87 (63 percent) included some form of ethnic classification. North America, South America, and Oceania were the regions with greatest propensity to include ethnicity questions while Europe and Africa were much less likely to do so. Among the cases that included ethnic enumeration, 56 percent used the term *ethnicity* or *ethnic*. The second most frequent term (23 percent) was *nationality*, which denotes origin rather than legal citizenship. The third ethnic enumeration (13 percent) category was *race.* The usage of race term largely confines to former slaveholding societies of the Western Hemisphere. Another category employed was *indigenous group*. Morning (2005b) noticed that the census ethnicity questions varied not only in terms of terminology but also in the language they used to obtain respondent's identities. The main differentiation came up in their recognition of ethnicity as a matter of subjective belief or objective fact. Subtle differences in formulations of questions mark a distinction between more constructionist understanding vis-à-vis essentialist concepts of ethnicity.

Despite the heterogeneity and complexity in measurements of ethnicity, for Morning (2005b) there are merits to compare the operationalization in different censuses. Comparisons may give information about on what basis social groups are thought to be differentiated in different countries. Also, they can illuminate strategies of governments with respect to ethnic groups in their countries. Censuses are indeed significant tools since they reflect political views and projects of the authorities in a society. In this vein, censuses[41] are not only simple bureaucratic routines, but they also construct particular vision of social realities by forming social categories pertaining to racial, ethnic, linguistic and religious groups in a population (Kertzer and Arel, 2002). Statistical construction of ethnic categories thereby, reflects historical and social specificities.

Based on historical literature Rallu et al. (1996), define four general governmental approaches to the categorization of ethnicities in censuses. The first

[41] There are also other tools with which state administration assign people into categories or collective identities; like, identity documents, passports, birth and death certificates etc. (Kertzer and Arel, 2002).

one is *counting to dominate and exclude (enumeration for political control)* that historically was closely associated with the colonial situation. In this type, the employed categories reflect racial and ethnic differences regarded to be scientifically apparent and pertinent. After independence, the majority of African countries maintained this ethicist approach in the name of preserving national integration. In many cases ethnic categories form the basis for exclusionary policies. Examples in this vein are the 19th and early 20th century censuses in United States and Canada. These censuses mainly assisted an immigration policy that aimed to exclude certain groups, such as Blacks and Asians, from these countries.

In the second approach, *non-enumeration in the name of national integration,* in contrast, many countries opt for not to count populations based on ethnic criterions so as to promote national unity. This model is closely associated with efforts of developing and building national identity. Usually, it is expected that ethnic awareness will disappear with modernization and nation building. In this context, conducting ethnic analysis per se turned taboo. The exclusion of ethnic categories from censuses, on constitutional, political and legal reasons, has characterized most unitary states of Europe; France, Germany, Spain, Belgium, Denmark, Sweden, Italy, Greece and Turkey are prominent examples.

The third approach is *counting or not counting in the name of multiculturalism (discourse of national hybridism)*. This approach is pertinent to countries wherein racial or ethnic mixing is acknowledged as a positive value, such as in much of Latin American. The fourth approach is *counting for positive action* and prevalent in the countries which made a transition towards a pluralist model: from ethnic based to civic nationalism. Typical examples are Brazil, Colombia, China, United States, Canada, and Great Britain where ethnic diversity results from immigration. The progressive recognition of pluralist ideas invokes new information on the social, economic and demographic conditions of the ethnic groups in societies (Rallu et al. 2006).

Accompanying the inclusion of ethnic categories in official statistics, there have been important ethical and methodological debates in the field of demography. The main question, as stated by (Leridon, 1999), is whether it is *possible*, *useful* and

legitimate to characterize individuals according to membership of a group defined on ethnic (or racial) grounds. Questioning of potential gains from the usage of ethnicity variables arise from the assertion that ethnicity is highly complex and that there is high risk to define it with too simple criterions. The critics highlight logical inconsistencies and ambiguities in ethnicity questions. For example, they underline that enumerating cultural affiliation as objectively as for example 'age' is problematic since cultural categories are not constructed outside of the political debates. Goldscheider (2002) states "*there are no simple, objective census questions, even though researchers often analyze the answers to census questions as if the information in the census were unbiased and objective*". Ethnicity questions in censuses or surveys, try to perceive how members identify themselves in terms of the racial or ethnic categories that are prevalent in a society rather than referring to some objective characteristics (Bulmer, 1980). Thus social research need to find out in which ways members of a society perceive differences between ethnic groups and define boundaries of such groups.

This argument thereby accepts the subjectivity of racial and ethnic identification. In this manner, ethnic groups in census type studies refer to the *discourse* about ethnicity rather than ethnicity *per se*. So as to evaluate census questions researchers should pay attention to following issues: whether any change happened in the formulation of ethnic questions from one census to another and whether self-identification criterion is fulfilled and whether all ethnic groups are included or some are excluded and whether questions insist on single responses or allow for multiple combinations filled in by respondents (Goldscheider, 2002).

Usefulness of ethnic categories is subject to criticism since there might be other social categories proven to be far more functional and that would better suit a behavioral analysis. In methodological respect, if declaration of a person's ethnic group is open to change (for instance, this may happen more frequently if person's parents are from different ethnic groups) treating ethnic trait as an invariant characteristics; like birth year, place of birth, sex, etc. would be problematic. The problem becomes even more complicated when ethnicity information is broken down with a variant characteristic, as socioeconomic situation. Rallu (et al, 1996) states

that "*measuring social distance, and socioeconomic characteristics in general obviously biased if the definition of the population in which characteristics are being measured is in itself social, in other words, if there is interaction between the social situation and the declaration of origin*".

Conversely, supporters of ethnicity questions claim that in order to compare minority group's position with that of the curiosity, in terms of housing, employment, education, and demographic characteristics, data gathering on these topics are essential. In many multiethnic societies racial or ethnic divisions are found closely associated with social and economic inequalities of 'life chances' (Bulmer, 1980). As such social structural differences persist then data on these differences will continue to be significant for policy reasons.

Legitimacy of the usage of ethnic categories is debated because categorization based on racial, ethnic or religious origins may result in stigmatization of some people. In fact, researchers, using ethnic categories in their studies, are warned that the usage should be placed in sociopolitical context and otherwise interpretations might be influenced by ideologies (Zuberi, 2001). According to this critical view in demographic studies, behavioral variations by ethnic groups in a population should be elaborated in relation to their life chances and access to opportunity structures (Saenz and Morales, 2005). Demographic studies in multiethnic developed countries, should aim to identify structured inequalities across ethnic groups. Ethnic recognition is sometimes asked by minority communities themselves so as to cope with their real or perceived discriminated social positions (Leridon, 1999).

III.5.b. Explanations of the fertility differences between majority and minority groups

Observed variation in behaviors across ethnic groups leads demographic investigations to find out the causes and consequences of these differences. There are two main lines of explanation: the "cultural approach' searches determinants of demographic variation in history and cultural traditions. This perspective asserts that demographic differences among ethnic groups can be attributed to cultural differences and varying degree of cultural assimilation (or acculturation). The "structural approach", on the other hand, seeks explanation in the degree of structural assimilation, which is to what extent ethnic groups have acquired the political and economic characteristics of the general population. Accordingly, structural approaches explain demographic differentiation by emphasizing compositional differences between minority and majority groups. (Frisbie and Bean, 1978).

The cultural and structural approaches are not necessarily mutually exclusive and contradictory; cultural pluralism may tend to parallel structural differences among ethnic groups. These two approaches both focus on the degree of cultural and/or structural *assimilation* of ethnic groups in larger society and they consider differential fertility of ethnic groups as a temporary phenomenon (Goldscheider and Uhlenberg, 1969). They assume that differences in fertility should disappear or minimize when dissimilarities regard to various social, cultural, demographic and economic characteristics diminish over time or when they are statistically controlled for in analysis.

Assimilation or social integration are elaborately discussed and utilized in migration studies in sociology, political sciences and demography. Regarding fertility studies; assimilation based explanations do not ascertain explicitly how cultural and/or structural characteristics are related to fertility behavior of individuals. They essentially acknowledge the arguments of demographic transition theory based. They try to clarify differences among population subgroups by highlighting their different social, economic and cultural attributes.

The term assimilation is an ambiguous concept. In the social science literature, assimilation has been used as a descriptive and analytic term (Frisbie and Bean, 1978; Yinger, 1985). Yinger (1985) defines assimilation as follows: "*A group is integrated to the degree that is its members are distributed across the full range of associations, institutions and regions of a society in a pattern similar to that of the population as a whole*". Another definition by Hirschman (1983) states that; attainment of the ethnic minorities to equal life changes with the majority group and not facing exclusion from societal mainstream is considered as a form of assimilation. Some authors use 'integration' instead of assimilation or some of them consider these two concepts as referring to two distinct phenomenons. Price and Zubrycki, (1962) wrote that 'integration' is the process whereby two or more ethnic groups adapt themselves so well that they accept and value each other's contribution to common political and social life. Assimilation, on the other hand, for these authors, covers not only this kind of integration but also includes economic absorption, social acculturation, and physical amalgamation too. In this sense, some ethnic groups, for example, could be well integrated but they may not be completely assimilated. Assimilation may also refer to a final stage where the minority group becomes completely indistinguishable from the majority.

According to Alba (2005) "integration" is preferred to refer to cultural and social differences without significant diminishment of ethnic cultural and communal attachments of minority groups. Integration in this manner can be attributed realizable mainly for members of groups that posses or can attain substantial economic resources.

"Assimilation" may not necessarily be conceptualized only in relation to ethnic minorities. As stated by Bommes (2005), if assimilation implies a 'process of becoming similar' then it can be seen as a basic condition of the mode of individual life in modern society. In modern circumstances individuals (either from majority or minority groups) gain social opportunities via inclusion into social systems that implies assimilation in several contexts. This is for example required by any individual who is expected to fulfill some participation in economic, political, juridical, educational, scientific, medical or other organizations. When assimilation is

conceived as a process related to expectations in social systems, rather than the ethnic groups, then four different dimensions of assimilation can be delimitated (Bommes, 2005).

Cognitive assimilation refers to assimilation of structures on the side of the individual in order to accomplish conditions of inclusion in social systems. It requires; learning languages, skills, behavioral and situational patterns, normative knowledge and orientations towards mobility etc. The second one is *structural assimilation* and refers to successful in taking membership in organizations, gain of income, occupational and legal positions as well as formal education. This dimension is the most investigated area in the sociology of social inequality. The third dimension is *social assimilation* and refers to minority group's social relations; like friendship, marriage, other associations or social networks. Studies on this dimension focus on interethnic relations and assume interdependencies between structural and social assimilation. The last dimension is *identification assimilation* and refers to the claims of belonging and identity made by ethnic groups by themselves. Migration studies for instance usually focus on this dimension; for instance intentions of immigrant's to return or be naturalized, their ethnic belonging, language use, and political orientations, so on.

Assimilation is a highly interactive multidimensional process and different dimensions of integration can vary at different rates and in different sequences. An ethnic group can be highly integrated into political, occupational, educational structures of a larger population yet still its acculturation could remain minimal, that is, their values and norms may not correspond with those of the society at large. Assimilation also happens in two-ways, though smaller and resource poor groups may more likely be affected by larger group than to affect it. The standard measures employed by social scientists to document immigrant assimilation are 1. Socioeconomic status (SES), defined as educational attainment, occupational specialization, and equality in earnings; 2. Spatial concentration, defined in terms of dissimilarity in spatial distribution and suburbanization; 3. Language assimilation, defined mastering dominant language in the destination country and loss of mother tongue; and 4. Intermarriage. The last two measures, language ability as an indicator

of acculturation and intermarriage (an indicator of assimilation), is typically investigated in ethnicity and fertility studies (Price and Zubrzycki, 1962; Saenz and Morales, 2005).

Both cultural and structural approaches are subject to critics and regarded not satisfactory to clarify distinctive fertility patterns of ethnic group vis-à-vis larger society. As presented in many empirical studies even though ethnic groups reach a similar social and economic level as society at large -or these characteristics are controlled for in statistical analysis- their fertility development may still remain distinctive. The cultural approach has a tendency to assign unexplained variance, after controlling for socioeconomic characteristics, to a broad residual category called 'culture' without going in depth with further examination. The structural view, likewise usually fails to distinguish simple compositional effects stemming from inequalities in power and stratification systems in a society (Frisbie and Bean, 1978).

Goldscheider and Uhlenberg (1969) were the first authors to search for an alternative way to explain the remaining differences in fertility when social, demographic and economic factors were controlled for. In their pioneer study, '*Minority status and fertility*', ethnic groups were considered as 'minorities' or 'minority groups' in larger society. The study compared the fertility level of "*Negro, Jewish, Japanese-American, and Catholic*" minority groups vis-à-vis the White/Protestant majority in the United States of America. They assumed that as being a minority group member, individuals might find themselves designated with a particular 'minority group status', which does not, totally refer to distinctiveness in terms of social class (educational attainment, occupational distribution, and income level), type of place of residence, or social mobility patterns, etc. Minority groups may or may not be different from larger society in terms of the mentioned characteristics.

According to Goldscheider and Uhlenberg (1969), the key determinant of minority group status is "*the degree of and desire for acculturation*", i.e. the combination of cultural and behavioral convergence with majority group. If there is no preeminent desire for acculturation, then concerns with group preservation a may dominate. This may lead to persistence of traditional patterns of family life,

conductive to high fertility, even though social and economic conditions may imply a fertility decline. Thus high fertility of these kinds of minority groups may not be related to *a cultural or social lag* as compared to that of the majority group, but rather pertinent to their low desire of acculturation. Goldscheider and Uhlenberg (1969) explained persistently high fertility of some religious minorities; e.g. Catholics, Black Muslims, Hasidim and Hutterites in the United Sates with this social situation. Most of these minority groups were characterized by large family size norm and ideological prohibitions against efficient contraceptive methods. Thus, the desire to adherence to their particularities brought about higher fertility although their social and economic conditions would predict lower fertility level.

Goldscheider and Uhlenberg (1969) also tried to explain causes of the lower fertility of Jews and Japanese-Americans, concentrated among the educated urban middle-class population, compared to the White/Protestant American counterparts. The lower fertility of these groups can only be partially explained by their high socioeconomic standards due to fact that when their 'characteristics' were standardized or controlled for in the analysis, the lower fertility level of these groups were still persistent. The authors thereby elaborated the minority group status explanation for this case as well. According to their interpretation, another attribute of the minority group status was the real or perceived feeling of insecurity that stemming from their 'marginal' social positions in comparison with the majority and other minority communities.

Goldscheider and Uhlenberg (1969) actually borrowed the 'marginal man' concept from the sociological literature. Marginality in this literature was seen as caused by cultural conflict and differential assimilation of minorities into society. Marginality might appear in an individual who participates extensively and intimately in a culture of the dominant group but still find him/her being *rejected*. Marginality can be seen a problem of second-generation immigrants who remained between two cultures and experienced cultural conflict at individual level (Green, 1947). Therefore, it is not being a member of minority group that directly brings about 'marginality' status. But rather, some members from these groups may experience this situation during their integration and identification process to

dominant society. Goldscheider and Uhlenberg (1969) exemplified this situation as follows: "*insecurities associated with minority group status will be greater among non-white college women than non-white women of low education, and will vary for immigrant minority groups in terms of the degree and swiftness of their particular acculturation patterns*". Accordingly, for the authors, the relationship between minority group status and fertility did not operate in a same manner at all socioeconomic levels. The desire for upward mobility of some minority group members may imply greater deferred satisfaction than for the majority group members who are not exposed to the same disadvantages and ambiguities. This in turn might account for the postponing or limiting of childbearing of the minority group members, particularly at middle and upper social class levels. This explanation also rested on the absence of a pronatalist ideology or norms of discouraging the use of contraceptives for the particular minority group.

Subsequent to Goldscheider and Uhlenberg (1969) the 'minority group status' argument was undertaken by other researchers in order to explain the differential fertility behavior of minority groups, in the United States and some other countries. Sly (1970), for example, considered minority status explanation as "*an alternative social psychological argument which approaches the differential in terms of the insecurities associated with minority-group status*". He used the United States census data and cross-classified data on children born for white and nonwhite women by region and socioeconomic indicators. A three-way variance analysis rejected the 'characteristics' based hypothesis as an explanation of between-group fertility variation. The study found lower fertility for highly educated nonwhite women than for the white counterparts when education was controlled for. This finding indicated that the minority status in that context affected fertility only after a certain degree of institutional assimilation had occurred.

Another study conducted by Roberts and Lee (1974) highlighted some analytic problems of the two previous studies cited above; like, problems of definition of ethnic groups, the failure to control for some demographic variables (age at marriage) and the extensive focus on cumulative fertility. They used 1960 1% Public Use Sample data of the United Census in their analysis with a more extensive

framework. Instead of the usual white-nonwhite dichotomy, they used three categories; white, nonwhite (Spanish surname shifted to the nonwhite category) and a Spanish surname-other-white-Negro group. This new classification presented more variation in fertility and effect of independent variables (ethnicity, education, income, occupation and type of place of residence) on cumulative or current fertility.

The way ethnic group status was defined influenced the analysis results in Roberts and Lee's study (1974). Higher precision of group definition yields greater predictive power to explanatory variables in the analysis. The structural variables; like place of residence, income, occupation, education and ethnic status, did not provide much explanation of the observed fertility differentials, contrary to author's expectation. Therefore, for further research they pointed out to investigate influence of social psychological factors, or the minority group status effect; perceptions, beliefs and behaviors of persons among various ethnic groups. Roberts and Lee (1974) concluded with one of the major questions of this field; "*the important question becomes how the interaction of structural factors (such as, occupation, income, and education) and cultural factors (norms, values, beliefs and life styles) operates to affect fertility behavior in different ethnic populations*".

Some authors propose alternative operationalization of majority and minority group statutes. Instead of focusing on the independent explanatory power of minority group status relative to that of various social, economic and demographic factors, Bean and Wood (1974) examined relationships between socioeconomic factors and fertility separately within majority and minority groups. Instead of comparing fertility levels between majority and minority groups, they studied the relationship between fertility and other variables as estimating models separately for each group. They analyzed the effects of husband's potential and relative incomes on both completed fertility and parity progression probabilities, with samples on "*Anglos, Blacks and Mexican Americans*". Results revealed marked different patterns of relationship between the measures of income and fertility. For instance, the effects of the income on completed fertility were found as positive for Anglos and negative for Blacks and Mexican Americans. However, in the case of Mexican Americans whereas the effect of potential income was negative, the relative income effect was

positive. The authors also addressed whether income variously effect different parity orders among and within ethnic groups. The income effects on the parity progression probabilities indeed tend to appear in somewhat different patterns at different birth orders.

Another approach was suggested by Kennedy (1973) who ascertained the differential fertility of Protestant Irish minority vis-à-vis Catholic Irish majority in the Republic of Ireland and of Catholic Irish minority vis-à-vis Protestant Irish majority in the Northern Ireland. This outlook emphasized not only the importance of social and cultural but also political climate in which reproduction occurs. Kennedy used census data and estimated crude birth rates and child-woman ratios for Catholic and Protestant populations in both societies, focusing on the period of 1937-1961. Much of the differential fertility was attributable to religion and Catholics on average had higher fertility in both societies. However, Catholic fertility was at least a half child higher in the North than in the Republic of Ireland. According to Kennedy, in the Northern Irish situation the minority status of Catholics was affecting fertility behavior in a certain contextual setting. Catholics were relatively many and the size of the group was politically important in that setting. Also, they were economically disadvantaged; channels of were more limited and the cohesiveness of the group was stronge.

A similar contextual approach was used by Ritchey (1975) who studied black and white fertility in the United States. In addition to examine effects of individual-level social, economic and cultural variables, Ritchey employed a racial inequality index variable in the analysis. The aim was to consider variations in structural milieu, as well as the characteristics of individuals, in the effects on fertility. Data from the 1970 Census Public Use Sample were used and the dependent variable was the number of children ever born. Ritchey used several multiplicative interaction terms in the regression analysis; like between Race and Education, Race and Age, Labor force status and Education and examined their effects on fertility. It appeared that black population had a higher fertility than whites overall. However black's pattern was exhibit a steeper negative relationship between education and fertility. More importantly, both of these effects loose magnitude as racial inequality decreased.

Accordingly, Ritchey concluded that the minority status effect on fertility works in combination with both socioeconomic status and social milieu[42], referred in this context to racism.

As seen in the literature review, the independent effect of minority group status on fertility dynamics has been elaborated in several studies, most of them on the United States context. At the end of 1970s, Bean and Marcum wrote an assessment about the previous research up to their date. They basically highlighted some conceptual and methodological problems of these studies. A major problem of interpreting ethnic group fertility differences in terms of minority group status was related to the definition of the concept. It was used in different studies with different definitions. Bean and Marcum (1978) summarized criterions proposed by researchers to define minimum conditions of minority status. In these studies, a minority group is defined as any racial, ethnic or religious population characterized by the following attributes: a) small size relative to the total societal population, b) a relatively clearly defined subculture and separate pattern of social interaction, c) a historical pattern of opposition from and discrimination by the dominant population, d) membership determined by ascription through a 'socially invented' rule of descent. According to Bean and Marcum (1978) the most important criterion among the four was the third one.

In another publication, Bean and Tienda (1990) investigated fertility patterns of the Spanish origin populations vis-à-vis Non-Hispanic white women in the United States and the criteria of minority group membership employed were: 1) constituting only a small proportion of the country's population, 2) experiencing some sense of self-awereness as belonging to that particular group. 3) experience of some discrimination at the hands of the majority groups and 4) at least to some extent discernible appearance as member of a given racial/ethnic group. In a recent study

[42] In a recent study (Hanks, 2006), although the minority group status argument was not used explicitly, the importance of the contextual approach in comparative studies of ethnic fertility dynamics similarly underlined. The study investigated West African context and found that religion strongly inflecting reproductive practice yet this effect is not constant across different communities. In West African countries with Muslim majorities, Muslim fertility is lower than that of their non-Muslim conational. However, in countries where Muslims are in the minority, their reproductive rates are higher than that of the majority. The study reported that this difference tend to converge when levels of education and urban residence are taken into account.

similar criterions were employed to analyze fertility differences among ethnic groups in China (Poston et al. 2006). In the context of China, the minority populations however are not thought of as races since ethnic groups, with few exceptions, are not distinguishable from one another on the basis of physical attributes. As Poston et al. (2006) stated the identification rather depends on cultural and linguistic differences over time have been relatively persistent. In both Bean and Tienda's (1990) and Poston's et al. (2006) studies the fertility differences between majority and minority populations are scrutinized with four different kind of hypothesis.

The first one is the 'subculture hypothesis' which posits that the higher fertility of minority population is due largely to cultural norms and values and in some instances policies that support larger families. This hypothesis argue that the higher fertility of minority groups would persist, and among the more socioeconomically advanced minority populations, even after taking differences in socioeconomic characteristics into account. The second one is the 'social characteristics hypotheses and stipulates that the differences between the groups are due to their social characteristic. Thus, the more the minority groups resembles the majority in terms of socioeconomic and residential characteristics, due to greater assimilation, the more their fertility becomes closer to that of the majority group. The third one is the 'minority group status hypothesis' which suggested that membership in a particular minority population would have an independent effect on fertility behavior. These effects will also differ depending on the group's socioeconomic status; while the low socioeconomic status may bring higher fertility, the high socioeconomic level may bring about lower fertility than that of the members of majority groups in similar socioeconomic circumstances. The last one is the 'economic hypothesis' with arguments dependent upon new household economics models of fertility behavior. The hypothesis suggested that the fertility differences between majority and minority women would be at a minimum level when the women are similar with respect to their potential for obtaining income.

IV. DEMOGRAPHIC AND FERTILITY TRANSITION IN TURKEY

As the world population has undergone a global demographic transition, Turkey's population too has experienced substantial changes in its demographic structure during 20th century. The first national census in Turkey revealed the population of Turkey as 13.6 million at the end of first quarter of the 20th century. The latest, Population Census, carried out on 22nd October 2000, put the population of Turkey at 67.4 million (Turkish Statistical Institute, 2006). According to the latest mid-year population estimates of the Turkish Statistical Institute (Turkish Statistical Institute, 2006), the population of Turkey is around 74 million by the year of 2007, showing that the total population of the country has increased 5.4 times in the last 8 decades. Turkey indeed is among the 20 most populous countries of the world today, and it is the most populous country of the Western Asia and the second populous country of the Europe after Germany (Population Reference Bureau, 2006).

Nationwide reliable demographic data[1] have been collected from the end of the first quarter of the 20th century and they indicate several characteristics of a nationwide demographic transition. Earlier than the nationwide change, the demographic transition initiated in the late 19th century and early 20th century in some metropolitan cities of Turkey (Fişek and Shorter 1968; Shorter 1969; Shorter and Macura, 1982; Duben and Behar, 1991, Behar, 1995; Shorter -in SIS-, 1996). Duben and Behar (1991) developed the most extensive arguments on this topic in their work on the demographic history of İstanbul. They collected wide-ranging empirical evidence from Ottoman population censuses and registration schemas. Additionally, they compiled written sources on cultural and social features on marriage, family and fertility. According to their interpretation, the fertility decline in Turkey was

[1] Turkey began to collect nationwide demographic data via censuses: the first population census took place in 1927 and beginning with the 1935 census, subsequent population censuses were undertaken regularly at 5-year intervals until 1990. After 1990, the latest, fourteenth, Population Census carried out on 22nd October 2000. Moreover, beginning from the mid 1960s, there have been extensive national level population and health related data collection activities via household sample surveys (Hacettepe University, 2004).

commenced relatively precociously as early as the late 19th century in the larger cities of Ottoman Empire, especially in İstanbul and İzmir. Until the last few decades, the demographic developments in İstanbul and nationwide Turkey have been quite distinctive. For example; during the1930s and 1940s, while a typical rural Turkish family had 7 children on average (and in towns and other cities slightly over than 4 children), the fertility level had already fallen to replacement level among İstanbul families (Duben and Behar, 1991). This early fertility decline was not only attributed to non-Muslim minority population groups (Greek, Armenian and Jewish) or urban middle/high classes, but it was a general trend including Muslim population and poorer urbanities as well.

İstanbul, as being historically a metropolis and capital of the Byzantium and Ottoman Empires, has always been a centre of economic and social connections with other countries and regions. Following the westernizing social and political reforms of the 1830s, known as the *Tanzimat* era, connections to European economies increased progressively in the 19th century (Ahmad, 1993). For instance, the wage-labor and market economy relations first developed in this city and other commercial centers of the Ottoman Empire[2]. Along with the economic developments, there was extensive modernization in bureaucracy and spread of western ideas and manners in public. In this social context there was a visible fertility decline starting from the 1880s. The modernization of this time can be seen as an integration process of a traditional society to western capitalism along with economic and societal changes. Nevertheless, due to lack of economic and social integration in the Ottoman Empire in 19th century, this trend was to a great extent confined to İstanbul, some other harbor cities and their hinterlands.

Another particularity of İstanbul lays in its historically distinctive marriage and household formation patterns. According to Duben (1990), characteristics of this family system resembled both those of Anatolian Turkey and in certain respects Turkey's Mediterranean neighbors. Duben and Behar labeled (1991) this "*amalgam*"

[2] The other relatively smaller cities; İzmir, Thessaloniki (Selanica), Damascus and Aleppo were sharing similar cosmopolitan attributes of İstanbul in the Ottoman era. Christian and Jewish groups in these cities had an intense commercial and cultural contact with European countries since Middle Ages (Lewis, 2004). Among these cities İzmir, is now the third most populous and second largest port city after İstanbul in modern Turkey.

pattern as *northeast Mediterranean/Balkan urban*. Some of the major attributes were late age at marriage for males and moderate age for females, a de facto system of neo-local residence of newly wed couples, economic and social independence at marriage, and a kinship environment in which a similar importance was placed on the relatives of wife and husband. Together with 19th century modernization and westernization, these family and household formation attributes became important facilitating factors for reduced family sizes. Some important changes were development of egalitarian gender relations, a declining role of parental involvement in marriage arrangements, establishment of more companionate unions, a greater focus on children and western lifestyle manners (e.g. dressing, eating habits, household furnishing and internal usage of household space) (Duben and Behar, 1991; Özbay, 1999).

In this manner, significant gender role changes in marriage and changes in issues concerning women and families, and reproductive issues (birth control and abortion) first begun in the late 19th century's İstanbul. This trend later diffused to other big cities of Anatolia like İzmir and Ankara in the early Republican era. Together with wide spread socioeconomic change it largely began to spread nation wide in Turkey from the 1950s on (Tekeli, 1982; Özbay, 1990 and 1999). We can assert that the general course of nationwide demographic transition began in the first quarter of the 20th century in Turkey.

IV.1. THE FIRST STAGE: FROM THE 1920s TO THE 1950s

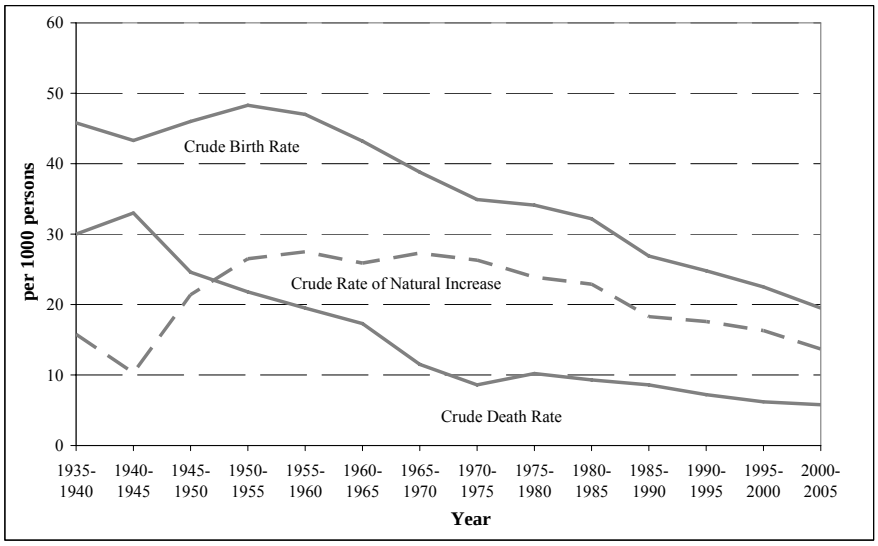
According to Shorter (SIS, 1996), the period from 1920 to mid 1950s can be considered as the *first stage* of the country's demographic transition. The first two censuses show that the population of Turkey had been badly scarred by the Balkan Wars (1912 -1913), World War I (1914-1918) and immediately after these two, the War of Independence (Greco-Turkish war) (1919-1922) (Taeuber, 1958; Shorter, 1985). Firstly, the ethnic composition of Anatolia dramatically changed in the ten years between 1914 and 1924 marked the disappearance of the Armenian and Greek communities of Turkey. The deportation of majority of the Armenian community to

the Arab periphery took place in 1915-1916. The compulsory exchange –repatriation- of Orthodox Greeks of Turkey to Greece and Turks or Muslims of Greece to Turkey carried on from 1923 to 1930[3], (Courbage and Fargues, 1997; Arı, 2000). Secondly, the Turkish (or Muslim) population of Turkey suffered from these military actions, civil disorder, and poor living conditions so much so that age structure was highly distorted. The most striking scar was the deficiency in the working ages, particularly of male population (Shorter, 1985; SIS, 1996). There was also notable deficiency of very young children due to excess infant and early childhood mortality and reduced childbearing during these war years. Both the sexual imbalance and the general human deficit took many decades to repair as people aged and younger ones grew up.

Providing peaceful and secure living environment, the foundation of the Republic in 1923 ended the excess mortality era. Thereafter, high fertility resulted in renewal of the country's demographic structure from the 1950s. Reliable estimates of national mortality decline are evident from the late 1930s and with greater confidence after the 1950s (Shorter and Macura, 1982). Although the magnitude of improvement is not precise, mortality had been in decline from the mid 1920s to mid 1940s. The immediate health problem of the early Republic was the widespread contagious diseases (e.g. malaria, tracoma, tuberculosis) in the population. These epidemics were eventually eradicated at the beginning of 1950s. Turkey was not involved in the World War II but due to the country's mobilization and isolation material conditions of life worsened and mortality increased during these years (see Crude Death Rate in Figure IV.1.1 and life expectancy and infant mortality estimates in Table IV.1.1).

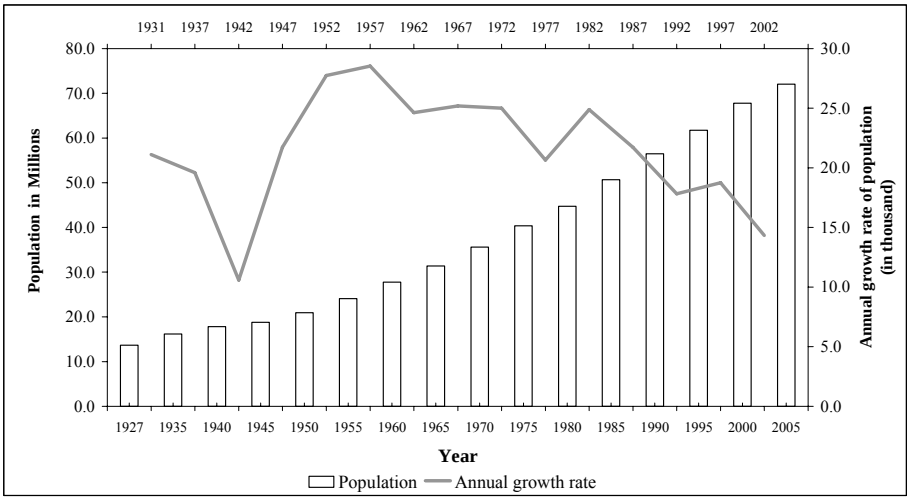
[3] The extensive part of this population exchange took place between 1923 and 1925 (Arı, 2000).

Figure IV.1.1. Crude Birth Rate, Crude Death Rate and Crude Rate of Natural Increase: 1935-2005



Source: Estimates for 1935 to 1975 period are from Shorter and Macura, 1982; 1975 to 2005 are from United Nations Population Division, 2007 (medium variant estimate)

Figure IV.1.2. Population size and annual growth rate of population: 1927-2005



Source: Turkish Statistical Institute, 2006
Note: Population size and annual growth rate estimates are from census results. The figures for 1995 and 2000 are mid-year population estimates of the Turkish Statistical Institute, 2006. Annual growth rate of population is population increase per 1000 population per year in the period between two census dates

Following the foundation of the Republic, high and rising fertility until the mid 1950s enabled renewed population growth. Thereby the human loss of wars (nearly 2 million persons between 1911 and 1922) was compensated in a decade (Shorter, 1985). The shortage of males aged 20-54, approximately one million, took until early 1940s to be overcome. However, the general sexual imbalance in the population persisted much longer and a normal balance was only reached by the 1950s. In 1935 – 1940, the annual growth rate of population was 19.6 per thousand yet in 1940 – 1945 the annual growth rate decreased to 11 per thousand. During the 1945 – 1950 period, the growth rate raised again to 21.7 per thousand as a result of increase in marriages and births in the post-war period, and decrease in mortality because better general health conditions. According to Notestein (1946) Turkey was among the countries entering its 'transitional growth' stage of demographic transition, characterized by *modernization*, *urbanization* and *population growth*, at the second half of the 1940s.

Table IV.1.1. Total Fertility Rate, Life Expectancy (by sex) and Infant Mortality Rate in Turkey: 1935 - 2005

	Total Fertility Rate	Life Expectancy			Infant Mortality Rate (per 1,000 births)
		Male	Female	Both Sex	
1935-1940	6.66	34.7	36.2	35.4	273
1940-1945	6.55	30.1	32.6	31.4	306
1945-1950	6.85	36.7	39.6	38.1	260
1950-1955	6.90	42.0	45.2	43.6	233
1955-1960	6.60	46.5	49.7	48.1	203
1960-1965	6.19	50.3	54.0	52.1	176
1965-1970	5.70	52.4	56.4	54.3	153
1970-1975	5.30	55.0	59.2	57.0	138
1975-1980	4.72	57.5	61.7	59.5	115
1980-1985	4.15	59.0	63.2	61.0	93
1985-1990	3.28	61.0	65.3	63.1	70
1990-1995	2.90	64.0	68.5	66.1	54
1995-2000	2.57	66.6	71.2	68.8	40
2000-2005	2.23	68.5	73.3	70.8	31

Sources: Total Fertility Rate estimates for 1935-1975 period are from Shorter and Macura, (1982), Life Expectancies and Infant Mortality Rates for 1935-1950 period are from SIS (1996), the remaining estimates for 1950-2005 are from United Nations (2007) (medium variant estimate)

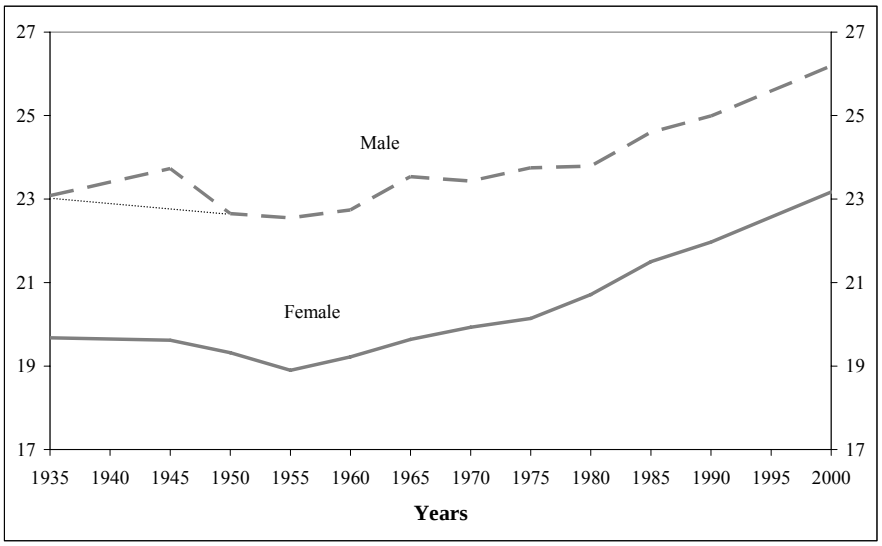
IV.1.a. Pro-natalist Population Policy

Immediately after the foundation of Republic, both civil society and state were in favor of a high fertility regime so as to rebuild family and social life and to overcome labor force shortages. Therefore a 'pro-natalist' population policy was formed in this era: while fertility and immigration was encouraged, the import and sale of contraceptives (other than for medical reasons) and abortions was prohibited. Additionally, there were a number of laws passed which had direct or indirect implications on population growth. The legal marriageable age determined by Turkish Civil Code in 1926 –an adaptation of the Swiss Civil Code- was 18 for males and 17 for females. In 1938 with a new amendment, the minimum marriage was reduced to 17 and 15, respectively, other laws in the direction of pro-natalist policy were tax exemptions, priority for land distribution, re-payment concessions for those many children, small child-support payments for public employees, the granting of legal and financial advantages to immigrants, etc. (Altiok, 1978).

Different political interest groups in society acknowledged the official pro-natalist policies. Nevertheless, the effect of policy on fertility is highly questionable (Altiok, 1978; Behar, 1995). Rather, as Shorter pointed out (1985 and in SIS, 1996) the direction of societal change during the 1920s and 1930s was itself was quite supportive of a high fertility regime. These developments were demobilization of armies and reductions in the length of military service, improvements in nutrition and sanitary conditions, availability of agricultural land for farmers without threat of diminishing returns, emergence of a relatively free market and progressive commercialization, and improvements in transportation infrastructure (Taeuber, 1958; Shorter, 1985). Thus, the environment of agricultural production encouraged early marriage and family formation. The general marriage pattern that characterized Turkey's population from 1930s to mid 1950s was universality of marriage for both sexes and highly concentrated transitions around mean ages (marriages have not been spread over a large age range) (Berksan, 1969; SIS, 1996). Singulate Mean Age at

Marriage estimates, in Figure IV.1.a.1, shows presents that age at marriage began to increase only gradually from the mid 1950s (except for a temporary rise for males during the World War II period).

Figure IV.1.a.1. Singulate Mean Age at Marriage: 1935 – 2000



Source: SIS, 1996; figures for year 2000 are self-estimation from census data (SIS, 2000) on marital status by age. Results are 26.19 years for males and 23.17 for females.
Note: Mobilization trend of young men during II. World War shown by light dotted line. Data is not available for 1940 and 1995. Figure for these two time points is drawn by interpolation. For methodology of SMAM estimation, see Hinde, 1998 and for discussion concerning Turkish SMAMs, see Berksan, 1969 and SIS, 1996.

IV.1.b. Republican reforms

The 19th century marked the foundation of several modern political and social institutions in the Ottoman Empire; for instance, constitution, parliamentary regime, political parties, press, modern army and civil bureaucracy, education system, university, governmental and fiscal systems etc. Additionally, the roots of Turkish nationalism, one of the basic founding principles of the Republic, reflected in the *Young Turk* movement, can be traced back to the late Ottoman Era. (Aydıngün and Aydıngün, 2004) The emergence of the Republic can be seen as a culminating point

of this process of reforms. For example, Bernard Lewis (2001) wrote "*The Turkish revolution began in a formal sense with the forcible overthrow of an old political order and the establishment of a new one in 1908. In another sense, however, it had been going on for nearly two centuries*".

The foundation of the Republic was marked by radical changes from the old social order. Republican elites aimed to enhance modernization and westernization (Ortayli, 2003). The entire social structure and remnants of the old social order would have to be transformed so that Turkey too could have social classes and institutions like those of the advanced countries of Europe. 1920s and 1930s, was witnessed much radical social and economic reforms (See Table IV.1.b.1). The uppermost aim of these reforms was to form a society and state on the basis of secularism and nationalism (Ahmad, 1993). The early Republican efforts also indented to transform the archaic agrarian structure of society to more urban and industrial one. The origins of modern industrialization in Turkey can be traced back to this era (Balamir, 1978).

Nevertheless, until the beginning of the 1950s the pace of transformation was relatively slow and not extensive enough to initiate persistent transformation of the rural structure of the country (Duben, 1985). For instance, Stirling's (1953) carried out an anthropologic and ethnographic fieldwork, at the beginning of the 1950s in some Central Anatolian villages, and he made the following observations;

> *"Somewhere about 80 per cent of the population of Turkey are peasants, among whom in spite of recent efforts, the illiteracy rate is still high. Very few of the intellectual revolutionaries realized how slow and inefficient the practical application of the reforms was bound to prove in rural areas, nor how limited would be the economic benefits to the peasants. The republic inherited with very poor communications, and an administrative tradition totally unsuited to running a modern state, staffed in many cases by people hostile to or incapable of grasping the ideas behind the government imposed changes".*

Table IV.1.b.1. Chronology of major Republican reforms during the 1920s and 1930s in Turkey

	General	Secularization	Emancipation of Women	Literary Factors
1922	Sultanate abolished			
1923	Proclamation of Republic			
1924	Constitution adapted	Caliphate abolished; Gov't ministries of religious affairs abolished; Unification of education: traditional Islamic Schools abolished		
1925	Reform of headgear and dress (Fez outlawed); Adaptation of Gregorian calendar and clock setting;	Closure of sectarian convents and dervish lodges		
1926	Modern civil, commercial and penal law code adapted based on European model		Polygamy abolished; divorce by renunciation and civil marriage ; equal share of inheritance	*Millet* system ended
1927	First systematic census			
1928		The clause stating that "the religion of the state is Islam" removed from the constitution.		New Turkish (Latin) alphabet
1930			Right to vote and be elected at city hall elections	
1931				The Turkish Historical Society
1932				The Turkish Language Association
1933		Islamic call to worship and public reading Quran required to be in Turkish		
1934	Law on family names	Abolition of titles and by-names	Right to vote and be elected at parliament elections	
1935	Second systematic census			Sun language theory and Linguistic purification movement
1937		State declared secular (laïcité)		

Source: Webster, 1939; Library of Congress, 1996, Hacettepe University 2004

IV.2. THE SECOND STAGE: FROM THE 1950s TO THE BEGINNING OF THE 1980s

The period from mid 1950s to mid 1980s can be seen as the *second stage* of Turkey's demographic transition (Shorter, in SIS 1996). The annual population growth rate reached its highest value with 28.5 per thousand in years of 1955–1960[4] (Figure IV.1.1). The mortality level, which had risen temporarily between 1940 and 1945, reinitiated the decline due to swift spread of new drugs and public health programs (Shorter, 1969). The effect of this trend has been a continual increase in life expectancy and decrease in infant mortality until now[5] (see Table IV.1.1). The most important development in this era, on the other hand, was that the initiation of persistent overall fertility decline in the country. The Total Fertility Rate, around 7 children per woman at the beginning of the 1950s, in 3 decades it declined to 4.2 children per woman. Although it has not been dated precisely[6], the first nation wide demographic survey, Turkish Demographic Survey conducted in 1965, indicated that the nation wide fertility decline was initiated at the beginning of the 1960s (Fişek and Shorter, 1968). Considering the 1960 to 1975 period, about one third of decline in crude birth rates was attained as a result of change in the sex-age structure and proportion married. Increase in the usage of contraception, abortion and spousal separation due to migration accounted for the remaining two thirds of the decline (Özbay et. al., 1979)

The decline of fertility in this era was rapid relative to that of many other countries of the Middle East region. For instance, Turkey had a similar fertility to that

[4] The rate of population growth in Turkey raised sharply during 1940s and 1950s was in general due to trend of mortality and fertility. In the 1950s, another factor augmented the growth rate was inward migration from neighboring countries to Turkey (Fişek and Shorter, 1968; Shorter and Macura, 1982).

[5] The two peculiarities of the mortality decline in Turkey is that the gains in child health have lagged behind those of adults until 1990s and relative to the country's socioeconomic development the level of infant/child mortality has been higher than the expected (see for further discussion, Fişek and Shorter, 1968, Shorter and Macura, 1982, Behar et. al., 1999).

[6] There are other authors pointing beginning of 1960s as the onset of Turkey's persistent fertility decline too like Courbage (1999) Behar (1995) and Caldwell (2001). Taeuber (1958) and (Farooq and Tuncer, 1974) asserted that there was a reduction in fertility in Turkey in the second half of 1950s.

of Egypt, Morocco, Iran and Sudan at the beginning of 1950s yet 3 decades later fertility (TFR) in Turkey was 20 percent lower than that of Egypt and 40 percent lower than that of Iran though fertility declined in these countries as well (Behar, 1995). Notwithstanding this sharp fall in fertility, the population of this era was harboring significant growth potential due to substantial declines in death rates and the young age structure. Therefore, population maintained its growth and between 1955 and 1985, it doubled from 24 to 51 million. The growth rate began to decline gradually after the 1960s (see, Figure IV.1.2).

IV.2.a. Anti-natalist population policy

During the end of the 1950s, the benefits of population growth began to be questioned firstly by a small number of medical professionals in Turkey. These experts mainly pointed out the negative health consequences of the common illegal abortions in the country. They defended the idea that under certain conditions of medical necessity, abortion should be permitted and those women who not want to bear more children should be provided effective contraception. During the early years of the 1960s, a necessity of a population policy was discussed in parliament and public media. The first Population Planning Law (No. 557) was enacted in Turkey in April 1965. Along with this law, a General Directorate of Population Planning in the Ministry of Health and Social Welfare was established. The population planning law legalized importation, distribution and usage of contraception. Sterilization and abortion remained illegal unless medical necessities require it.

The scope and targets of the law defined in the second (1968-1972) and third (1973-1977) Five-Year Development Plans and family planning services were integrated with Mother and Child Health services. However, differently from the commonly accepted previous ‘pro-natalist’ policy, some political groups and parts of bureaucracy did not welcome policy change towards the ‘anti-natalist’ direction (Altiok, 1978). The official program was implemented rapidly and intensely during

the 1965 and 1969 period. Condoms had been available before 1965 too since it qualified as a prophylactic device against venereal disease. The IUD began to spread from 1964; oral contraceptives were in market 1966; vaginal creams and foam tables in 1967 (Fişek and Shorter, 1968). However, thereafter the implementation lost its strength. For example, there was neither an integrated education program for to family planning services nor regular distribution of information to the public. But rather, much of the information on population and family planning disseminated informally via other channels of communication; through books and media. There were other pitfalls too; Behar (1995) found the initial targets of the program as *overambitious* and unrealistic. Also the program did not prefer to promote a greater involvement of men in 1965 - 1985. The role played by this family planning program is so arguable that Behar (1995) claimed that "*Turkey's transition occurred in a social environment defined by strong economic development and weak family program*[7]".

However, largely independent from the program implementation the contraceptive usage has increased in Turkey since the early 1960s (see Table IV.2.a.1). Both usages of modern and traditional methods rapidly increased in Turkey and the traditional method use was higher than the modern one until the end of the 1980s. Therefore, the fertility decline from the early 1960s to the late 1980s was achieved to a great extent by means of traditional methods[8] (widely withdrawal - coitus interruptus-) rather than the modern methods provided by the population program.

If we evaluate the onset of the nation wide fertility decline in Turkey within the Easterlin demand-supply-regulation cost notion (Easterlin and Crimmins, 1987), we can claim that this trend was mainly driven by factors affected the demand side at that time. The supply of children reached the highest level at the beginning of the mid 20th century due to improved health conditions and renewed age structure in the

[7] A program efficiency report stated that official family planning program could account for only less than 10 percent of the effective fertility decline occurred between 1965 and 1980 (Behar, 1995).

[8] This experience was by no means unique to Turkey. The first demographic (fertility) transition was completed in Europe great extent before the advent of modern contraception too. As late as 1990s, coitus interruptus was still important in some countries of Southern and Eastern Europe and immigrants in Australia from these regions (Santow, 1993).

society. The cost of fertility regulation, availability and monetary cost of modern contraception might have been high due to relatively weak population program implementation. Nevertheless, withdrawal was a well-known and practiced method. The fertility had already declined to low levels in big cities, especially in İstanbul and İzmir, at the beginning of 1950s. Therefore the fertility regulation behavior – if it is seen as an 'innovation'- had already been prevalent in Turkey at that time meaning that the psychological cost might not be so high. Thereby, a sound explanation is that the demand for children must have been began to decline in the rural population during the 1950s and that this trend seems to have resulted in a visible fall in overall fertility during the 1960s. In this regard we should focus on socioeconomic changes, which may be favorable to a diminished demand for children that took place during 1950s.

Table IV.2.a.1. Percent of currently married women (15-49) by contraceptive use and method type: 1963-2003

Method Type	1963	1968	1973	1978	1983	1988	1993	1998	2003
Any method	21.9	32.0	37.7	38.0	51.0	63.7	62.6	63.9	71.0
Any modern	5.3	11.0	11.8	13.4	22.6	31.3	34.5	37.7	42.5
Pill				6.1	7.5	6.1	4.9	4.4	4.7
IUD				3.0	7.4	14.2	18.8	19.8	20.2
Condom				3.1	4.1	7.3	6.6	8.2	10.8
Female Sterilization				0.4	1.1	1.7	2.9	4.2	5.7
Other				0.8	2.5	2.0	1.3	1.1	1.1
Any traditional	16.6	21.0	25.9	24.6	28.4	32.4	28.1	25.5	28.5
Periodic abstinence				1.0	1.2	3.6	1.0	1.1	1.1
Withdrawal				16.8	25.0	25.7	26.2	24.4	26.4
Other				6.8	2.2	3.1	0.9	0.6	1.0
Not currently using	78.1	68.0	62.3	62.0	49.0	36.3	37.4	36.1	29.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Fişek and Shorter, 1968; Özbay and et. al. 1979; Hacettepe University Institute of Population Studies, 1980 and 2004, Ergöçmen et. al., 2001

IV.2.b. The onset of the nationwide fertility decline

Taeuber (1958) wrote one of the earliest explanations about the onset of the fertility transition in Turkey. Taeuber (1958) pointed out that Turkey's population was basically characterized by rural residence and agricultural production until the mid 20th century. In a slow residential and economic change the most likely cause of fertility decline for her was the continuous rapid population increase and its eventual severe economic pressure on families. As she argued, because of the economic difficulties in the beginning of the 1950s the movement from rural to urban areas quickened and this facilitated more frequent contact of villagers with outside life. She additionally wrote that the course of social and demographic development in Turkey was different than that of the classic Western type of the 19th and early 20th century. The country, characterized by non-European or modified European culture, was in a process of ongoing change from classical agrarian to classical industrial characteristics. Taeuber's explanations were not based on a conventional demographic theory paradigm. Nevertheless, the effect of widespread mortality decline in Turkey was pointed out as an underlying factor of the onset of fertility transition.

A decade later, Fişek and Shorter (1968) argued more directly that improvements in infant/child mortality[9] from mid 1920s to mid 1950 was one of the causes of the onset of fertility decline in Turkey. Their arguments, in this respect, were more in the line of classical demographic transition theory:

> *"The motivation to limit family size is probably connected most closely with the trend of early childhood mortality… Childcare is now catching up. As the proportion surviving beyond early childhood grows, increased demographic pressure will be felt by families and the motivation will be strengthened. In the cities child mortality has already come down to a more nearly European historical relationship with adult mortality. The*

[9] Although extent of improvement in infant/child health lagged behind adult health at the beginning, this gap has diminished in the course of modernization (see, Fişek and Shorter 1968, Shorter and Macura, 1982)

resulting demographic pressure is undoubtedly one of the factors encouraging more family planning in the cities than in the villages."

According to Fişek and Shorter (1968) the diffusion of *low fertility norms*, *knowledge of birth control methods*, and *attributes of Western-type culture* were also factors of fertility decline in Turkey. They wrote that İstanbul and İzmir, historical contact cities with Europe, had been the centers of diffusion of these new behaviors.

This main idea was picked up afterwards by Cem Behar and Alan Duben and extensively elaborated for these two cities and surroundings areas in Behar and Duben (1991). Nevertheless, their detailed work is focusing upon the peculiarity of these cities, particularly of İstanbul, and the main body of work is not explanatory enough to clarify plausible role of the diffusion process played in Turkey's fertility transition.

Ferhunde Özbay has been proposed another elaboration of Turkey's nation wide onset of fertility transition. According to Özbay's arguments, the general fertility transition initiated in Turkey was due to two important simultaneous developments. The first one is the mortality decline and the second one structural changes in society and economy, and particularly important, alterations in functions of the 'traditional' rural families (Özbay, 1984 and 1990). We already mentioned the course of mortality decline. In order to understand the second factor, we should look at changes in the family and household formation system.

The historical family and household formation system in Turkey resembled that of Hajnal's non-European joint household system. This system also shares similar characteristics of families prevalent in Mediterranean and East Europe in the past (Duben, 1985). The general features of the family system of historical, 'traditional', rural Anatolian households are described in anthropological and ethnographic studies. The typical patrilocal extended family household was the basic unit for subsistence or near-subsistence level production and consumption. A crucial feature of the family system was that marriage had no significance in household formation since newly married couples typically moved to the son's paternal household. The daughters, on the contrary, leaved the natal household with marriage. Instead, the mortality, by means of death of the father, precipitates the fission of households. Even after the

fission, proximate residence of relatives was quite common. Marriage was involved in transfer of wealth in the form of bride's price to the father of the bride or in the form of *mehr* to the bride herself. The relationships among family members were highly structured by sex and age based hierarchies. The authority remained in the hand of the patriarch, and the young couple had no control over the factors of production. Arranged marriages were common and newly married couples, especially new brides, had the lowest level of status in new households.

In this system, parallel to the developmental cycle of the patrilocal extended households a woman's status and power change over time. Young bride's status is at lowest level when she moves into her husband's household and it increases when she has children, especially sons. The status and power reaches its zenith as she gets older and in turn rules over a daughter-in-law. Inheritance system stipulated fragmentation of estate equally among the sons yet more equitable division among male and female children was prevalent in urban areas and western parts of Anatolia (Kandiyoti, 1976*;* Duben, 1985).

As described above, apart from the major cities, their hinterlands and western part of the country, the typical Turkish rural household system was in general characterized by a patrivirilocal joint household system (Geber, 1989). Nevertheless, as Duben (1985) points out the majority of households in this system were not joint. The historical evidences instead have shown that the most common family household type at one point in time has been a simple or nuclear family household. The percentage of the joint (multiple) family households has never reached much beyond 30 percent of the total number between the mid 19th and 20th century. The seminal study on modern times Turkish family households, conducted by Serim Timur (1972) from the analysis of the '1968 Family Structure and Population Problems Survey', revealed that the nuclear families actually were the most prevalent family types in society (60 percent of all families) in 1968 too.

The discrepancy between the two observations; the dominance of joint family system in society but low percentage of joint family households at one point in time, can be explained in two ways. First, instead of living in one type of family all through his/her life, people experienced different family types at different stages in their life

courses. In other words, individuals were passing through different family household types. The size and complexity of these households were a function of three demographic factors: the number of sons surviving to marriageable age, the age at which they marry and the age at death of the patriarch. An adult person was more likely to experience multiple family households in the first years of his/her marriage and some years before he/she died. According to Duben' (1985) estimates; before the mid 1950s, only 35 percent of all fathers had a chance to witness the marriage of their first born son. Therefore, high mortality in adult ages was a significant constraint on the realization of patrilocal extented households. The high prevelance of the nuclear households at any given time was a result of being in the early stages of family development after splitting from an extended household. Throughout the reproductive time span, a person was more likely to live in a nuclear family household before his/her son(s) marry. Second factor was related to the wealth status of families: complex households have been difficult to maintain and it required relatively big land ownership.

The end of II. World War and subsequent social, economic and political developments were marked the beginning of Turkey's wide-spread societal and economic changes and Turkey's integration to world capitalist system (Özbay, 1984; İçduygu et al., 1998). Economic policy of the 1950s gave more emphasis to trade liberalization, agricultural and infrastructural development, and the encouragement of foreign capital as than the *étatiste* system of the 1930s and 1940s (Hacettepe University, 2004).

During the early 1950s, the most pronounced development was the boosting of mechanization in agricultural production with the Marshall Aid Plan, in the form of tractors and agricultural credits. The consequence of this extensive agricultural production strategy was a rapid expansion of cultivable lands. In a decade, cultivable land area indeed reached its natural limits in Turkey (Köymen, 1999). At the beginning of the extension of cultivable lands and agricultural production, increasing prosperity of the rural families resulted in declining age at first marriages throughout 1950s (see the Figure IV.1.a.1). The contribution of agricultural sector in Gross National Product was highly significant until the beginning of 1970s, ranging from 38

to 47 percent. Thereafter, it has been in a declining trend: the share of industry and services sectors has increased. However the rural families became relatively more prosperous during the 1950s, the direct and indirect effects of modernization were strong enough to decrease the demand for children. The first nation wide demographic survey carried out in 1968 indicated that the number of children desired in rural areas was ranging between 3.2 and 3.7 children depending upon the size of agricultural land of families (Özbay, 1984).

The rapidly declining mortality raised the number of surviving children as well as the life expectancies in adult ages (see trend of life expectancies and infant mortality in the Table IV.1.1). Therefore, two developments came together: while, on the one hand, mechanization decreased labor necessity in agricultural production, on the other hand, rural family sizes tend to increase thanks to declining death rates.

The father, head of the family, typically began to live longer than before and he had more surviving sons reaching adult ages. As cultivable lands reached their uppermost limit, the typical rural households began to face severe economic hardships. Sons who were formerly coerced into subordination to their fathers began to search for alternatives, because the fathers controlled the means of production (land). This eventually caused power struggles between older and younger generations. The search for new economic opportunities made it possible for the young generation to fulfill its aspirations. The necessity of change in the classical patriarchal extended family system thereby became inevitable. For Kandiyoti (1988) confrontation of young male adults to the authority in these families formed roots of change and the demise of the traditional patriarchal family system. The alteration of the old system, at first, empowered and emancipated young men. Afterwards same process enabled young women to escape control over their mother in laws too.

One of the significant outcomes of the alterations in the traditional rural families was the migration of young male adults to urban areas and soon after settling down, reunification with their wives and children in the cities. The internal migration from rural to urban areas has dominated Turkey's population dynamics since the 1950s onwards. The distribution of urban and rural populations was almost unaltered from the mid 1930s to beginning of the 1950s. Thereafter, the urban population has

been in constant increase: from 1950 to 1975 the annual increase was over 5 percent. The direction of the internal migration has mainly been from the East, North and Central regions towards the South and West regions.

Shorter stated (in SIS, 1996) that while low-fertility members of rural families, mostly moved and settled in other regions, those who stayed at origins were the high-fertility members of the households. In time, the weight of high fertility areas in national fertility declined and the weight of low fertility areas rose due to migration.

The national decline of fertility thereby was reinforced by process of this selective internal migration. Until those first generation young migrants adopted city life circumstances, their fertility was higher than the urban average[10]. The first generation migrant families in the cities had lower fertility than their rural counterparts and next generation migrants adopted the city norms and behavior are more so. According to Shorter, fertility has declined in the cities for two major reasons; first, due to lower child mortality couples could reach desired family size at lower parities than in rural areas. Second is related to changing life style: ambitions of being successful, more time intensive care of children during infancy and youth, considerations about future life of children –investments in education-, etc.

The improvements in road transportation and communication after 1950s have been important in facilitating migration. While agricultural goods were progressively produced for national and international markets, manufactured commercial marked goods from cities began to flow to rural areas. Migrants arriving at urban areas did not lose their connection with their extended families and neighborhoods. As a result, contacts of non-migrant rural population with urban areas were established and that institutionalized the internal migration. Levine (1973) observed that persistent informal networks that migrants maintained with their villages served as support system for migrants. These linkages also made urban acculturation and adaptation processes easier for migrants. The institutionalization of internal migration should have been contributed to the diffusion of *low fertility norms*, *knowledge of birth*

[10] For this reason, the total fertility rate in İstanbul, İzmir and other big cities increased throughout 1950s and 1960s yet thereafter fertility level has been in decline trend again.

control methods, and *attributes of Western-type culture* from metropolitan and city centers to rural areas and from western regions to eastern Turkey.

While internal migration began in the 1950s and gained momentum; the international migration process began to take place in 1961 with mutual agreements with some west European countries. This trend gathered its momentum during the 1960s while the 1970s marked the end of large-scale labor migration to Europe (İçduygu et al., 2001). In 10 years, 1 to 1.1 million workers and their dependants left the country (Balamir, 1978). During the 1980s, international migration became more oriented towards oil-producing countries of the Middle East. These internal and external migration flows have substantially contributed to the transformation from a traditional agrarian society to a modern one and accompanied changes in Turkey's population.

The change in family system, from dominance of patrilocal extended family to conjugal based family system, brought about the transition from high fertility regime to low one. Nuclear families, differently than extended family households, have had to shoulder the entire or most of the children raising cost (Behar, 1995). Özbay (1992) saw close linkages between these societal changes and the onset of the fertility transition in Turkey.

According to Özbay's (1992) arguments, the fertility transition was initiated with empowerment of young males vis-à-vis their traditional families. The role of men was pointed out by Behar (1995) too though he did not propose assertive arguments about the onset of fertility transition. Rather, his interpretation of the male role refers to general course of transition. Behar claims (1995); "*the exceptionally high male initiative, responsibility, and participation is perhaps the most salient feature of the fertility decision-making and implementation process in Turkey*". He underlined normative expectations from Turkish men that resemble those of found south European men: the importance of well established life and ability to support family through marriage, and moral, legal and financial responsibility for providing children. These explanations are actually novel since the demographic literature has usually given more preeminence to the empowerment of 'young' women as a *source* for change in fertility.

The two authors underlined two particular characteristics of the course of fertility decline in Turkey until the mid 1980s. The first one is the preeminent role of male dominated contraceptive methods, -withdrawal and condom- (see in Table IV.2). Moreover, other traditional methods, like periodic abstinence, require male knowledge and/or participation. According to Behar (1995) one of the main pitfalls of family planning programs in Turkey was their ignorance of the direct or indirect male initiative. Additionally the fertility decrease in Turkey has occurred in parallel with declines in the number of children desired by husbands.

As early as at the beginning of the 1960s married women in reproductive ages more firmly in favor of family planning and smaller family sizes than their husbands (Berelson, 1964). Özbay claimed that had the wife's fertility intentions been more pronounced in reproductive decision making, then the fertility level would have declined faster than the actual trend. The husband's say was higher than their wives and the number of children desired by husbands has been more important in fertility behavior of couples.

Indeed, according to Value of Children (VOC) survey conducted in 1975, there was a substantial discrepancy between spouses in terms of decision-making, role sharing and communication about family dynamics[11] (Kağıtçıbaşı, 1982). Male decision making at home was greater than of women and there was low levels of role sharing and communication between. Kağıtçıbaşı (1982) commented on this:

> *"Among all the nine VOC countries, the highest levels of male decision making and lowest levels of communication and role sharing found in Turkey. It would not be correct to attribute this situation to the influence of Islam, per se, as great inter-spouse communication and role sharing are found in Indonesia, also a Muslim nation. Middle Eastern and Mediterranean historical/cultural influence are also important for the situation in Turkey."*

[11] Questions about family dynamics and sex roles were follows in this survey: 1. Who decides about buying something expensive? 2. Who decides about how many children have? and 3. Who decides about using birth control? (Kağıtçıbaşı, 1982).

The traditional intra-family sex role segregation and low status of women in mid- 1970s' Turkey should be related to; the early stages of urbanization and the women's low level of education at that time. Findings of the Ankara Family Study, carried out in 1965-66 in the city center and four villages of the Ankara province, reveals that urbanization and education of women significantly changed the traditional family roles in Turkey (Schnaiberg, 1970a, 1970b and 1971). A woman's modernism was measured with six separate indicators in this study: 1. mass-media participation, 2. extended family relations (dominance of extended versus nuclear family ties), 3. nuclear family role structure (hierarchical versus egalitarian roles), 4. religiosity, 5. environmental orientation (broader view of environment from which to draw values and norms), 6. production/consumption behavior (engagement of home production of nondurable goods versus consumption of manufactured goods). Although estimated correlation matrixes did not reveal a perfect linear association between these six dimensions, meaning that individuals could be modern in one sphere and traditional in another, a common high covariance was found between *participation in mass media consumption* and *an egalitarian nuclear family structure* (Schnaiberg, 1970a and 1970b).

Schnaiberg's study (1971) shows a high correlation between women's modernism and duration of urban residence and socioeconomic level too. Certain interdependent life-cycle changes are related to women's modernism; place of birth, residence before age 10, education, husband's education, residence after marriage, current residence and family income. The childhood place of residence, wherein women socialized to adult roles was found a highly important determinant of modernism (Schnaiberg, 1970a). The women who experienced urban residence since early childhood and who attained high level of education had the highest modernism score at all 6 dimensions. Rural residence, short duration of urban residence, low level of education and socioeconomic attainment were underlying causes of persisting traditionalism.

Another similar study done in the mid 1970s among rural to urban migrants revealed that the more the individual participate in urban life, the more they adopted

urban oriented attitudes and beliefs (Levine, 1973). The duration of urban residence and education of a person were also found as important facilitators for individuals to get into contact with the social milieu of urban areas. These variables reflect adoption of more *modern beliefs* and *attitudes* among migrants in metropolitan cities. Kağıtçıbaşı (1982) also found in her study that the higher the women's education, the lesser the degree of 'old-age security' and 'material help' values are attributed to children, particularly to sons. Therefore, women's education was evaluated as the *strongest "modernizer"*.

Although it has not been shown empirically, as asserted by Behar (1985) and Özbay (1992) the initiative and attributes of males would have had more pronounced effects during the early stages of the fertility transition in Turkey. However, the direction of socioeconomic and societal changes during 1950-1980 was in line of modernization and promotion of women's empowerment. Also, it is reasonable to suggest that women's participation in reproductive decision-making, though it was minor at the beginning, progressively increased in this period.

We can get a better impression about this when comparing the general socioeconomic indicators of 1950 and 1980 (see Table IV.2.b.1). The proportion of rural population declined 27 percentage points in 3 decades and at the beginning of 1980 nearly half of the Turkish population was living in urban areas. Although the proportion of literate population for both sexes increased substantially, nearly 33 percentage points for both sexes, the gap between male and female literacy maintained. The sectoral share of agriculture in Gross National Product declined 14 percentage points at the expense of increase in the service sector. Gross Domestic Product per capita (PPP) raised in a decade 2.4 times from 1970 to 1980.

Table IV. 2.b.1. Selected indicators of socioeconomic change in Turkey: 1935-2000

	Proportion of urban and rural population (%) and growth rates (%)				Proportion of literate popl. (%)		Sectoral shares in Gross National Product (%)			
	Rural	**r_r**	**Urban**	**r_u**	**M**	**F**	**Agriculture**	**Industry**	**Services**	**GDP per capita (PPP) (US $)**
1935	83.1	2.0	16.9	2.5	30.8	8.0	44.7	8.9	46.4	
1940	82.0	1.7	18.0	3.2	na	na	46.8	10.0	43.2	
1945	81.7	1.0	18.3	1.4	44.3	13.5	38.8	15.7	45.4	
1950	81.9	2.2	18.1	1.9	47.7	16.7	44.8	14.6	40.6	
1955	77.5	1.6	22.5	7.2	56.3	21.3	39.0	15.6	45.4	
1960	73.7	1.9	26.3	6.0	54.8	21.1	40.9	13.1	45.9	
1965	70.1	1.5	29.9	5.0	64.7	27.6	37.5	14.7	47.8	
1970	64.2	0.8	35.8	6.1	71.0	36.2	37.5	15.7	46.8	938
1975	58.6	0.7	41.4	5.4	77.5	45.1	30.9	19.4	49.8	1548
1980	54.6	0.6	45.4	3.9	81.3	49.8	30.7	17.5	51.7	2288
1985	48.9	0.3	51.1	4.8	87.6	64.2	24.5	20.6	55.0	3320
1990	43.7	-0.1	56.3	4.1	89.8	68.5	24.2	20.5	55.4	4566
2000	35.2	-0.3	64.8	3.2	94.4	78.5	19.4	23.6	57.0	6820

Source: SIS, 1996; State Institute of Statistics 2000; Turkish Statistical Institute, 2006; State Planning Organization 2007; Figures of urban and rural population proportions and growth rates for 2000 are own estimation

Note: Urban (Rural) population is defined as places with (less than) 10.000 or more inhabitants. Growth rate of urban (rural) population is per year for inter-census periods. Proportion of literate refers to population 15 years of age and over. Proportions are calculated by excluding unknown. Literate population refers to persons who know how to read and write. Sectoral shares in Gross National Product is constant prices: 1923-1947 period at 1948 prices, 1948-167 period at 1968 prices and 1968-2005 period at 1987 prices. GDP per capita income is based on OECD Purchasing Power Parity for Turkey.

Apart from these quantitative indicators, ethnographic research carried out in this era shows that even in some rural regions of Turkey there was a visible change in gender relations towards more egalitarian pattern. For instance, June Starr (1989) carried out ethnographic research between 1966 and 1968 in the small western seaside town of Bodrum. Starr scrutinized empirical data from court records, 191 divorce cases of 1950, 1965, 1966 and 1967, as well as her 16 months fieldwork in Bodrum. According to these observations, there was an increasing trend of female-initiated applications to courts for divorce. The effect of secular civil law began infiltrate village-level life so as to solve intra-familial conflicts. Additionally, women were increasingly searching ways and taking actions to reduce family size and they were pushing their husbands to leave extended patriarchal households. Starr (1989) suggested that rural women became active participants in their changing life situations.

To what extent these observations are valid for nation wide rural Turkey is an open question. It is meaningful to assume that transitions were more pronounced in the rural areas of western and southern Turkey (coastal areas) due to the fact that these regions have historically hosted forces of modernization. At the beginning of nationwide fertility transition there were notable differences in both socioeconomic characteristics of population and fertility level by regions and type of place of residence in Turkey (Taeuber, 1958; Shorter and Fişek, 1969).

Shorter and Fişek's (1969) study has shown that there was little variation in the age at first marriage among regions in the mid 1960s in Turkey (see Table IV.2.b.2). A pronounced difference in this respect was the higher mean age at first marriage in the three metropolitan areas (İstanbul, İzmir and Ankara). Shorter and Fişek (1969) related observed fertility differences (shown as crude birth rates in Table IV.4) to differences in socioeconomic background indices, since differences in age at first marriage were small. Relative to its socioeconomic development indicators, North region had lower fertility than expected. The authors explained this finding with intensive out migration of young males from this region. Estimated correlation coefficients revealed a reliable negative effect of socioeconomic development indicators on fertility level. This statistical relationship was particularly

pronounced between literacy and birth rates. However, the association between literacy and fertility was found less pronounced in rural than in urban areas: "*social factors other than those indexed by literacy are more important influences on the birth rate in the rural areas*" (Shorter and Fişek, 1969).

Table IV.2.b.2. Selected socioeconomic and demographic indicators in Turkey, 1967

	Urban population (%)	Socioeconomic development index	Literacy rate (%)		Mean age at first marriage, females	CBR
			Male	Female		
West	48.0	135			20.1	31
Rural			51	34		36
Urban			67	47		27
İstanbul			76	63		24
İzmir			71	56		25
North	20.5	93			19.0	37
Rural			49	18		38
Urban			63	35		35
South	35.1	102			19.3	37
Rural			50	29		40
Urban			64	41		32
Central	35.3	97			18.9	47
Rural			52	17		53
Urban			61	35		35
Ankara			74	56		31
East	25.3	66	32	12	19.7	55
Turkey	29.9		65	28		41

Source: Shorter and Fişek, 1969
Note: The estimates based on '1965 Turkish Demographic Survey'. Birth rate for East region was estimated by a reverse projection, using 1965 census and plausible mortality assumption. Urban population is proportion living in places 10000 and over, from 1965 census. Literacy information based on population over 6 years age and from TDS.

Farooq and Tuncer's (1974) time series analysis, covering the period of 1945 to 1965, studied the effect of change in socioeconomic indicators on the trend of

crude birth rates. Several socioeconomic indicators[12] collected from five years consecutive censuses were used in this study. The findings seemed to affirm the results of the Shorter and Fişek's (1969) study; there was a substantial and stable negative influence of increasing social and economic development upon fertility during the study period. Among all socioeconomic indicators, female literacy had a pronounced effect on fertility trend. However, increasing education level did not appear contribute to fertility decline through the participation of women into non-agricultural labor force given the fact that this indicator did not change significantly in this era. The authors assumed that in Turkey "*continuing modernization and the concomitant spread of female education will result in a continuing decline in the fertility rate*". Thereby, as a population policy they proposed speeding up the economic and social transformation, rather than adaptation of the family planning program.

The general trend of socioeconomic development and fertility shows that Turkey was a *transitional society* (Schnaiberg, 1970a) in this period. From the 1950s, both socioeconomic development and modernizing legal reforms have had an impact on the structuring of modern Turkey's population and the rising status of women (Starr, 1989; Behar, 1995; Ergöçmen, 1997). The raditional and modern patterns has coexisted while the general direction of societal change has been towards modernization.

[12] These variables are: *the proportion of literate population (male and female), distribution of male labor force (agriculture/industry/service sectors), female non-agricultural labor force participation (for age 15 and over), urbanization level and marital rate (percentage of females aged 15 years and over who are married), real GNP per head (in US dollars), composition of GNP (agricultural/ industry/service).*

V. THE ECONOMIC AND SOCIAL DEVELOPMENTS IN TURKEY FROM THE 1980s ONWARDS

V.1. GENERAL TREND IN ECONOMIC DEVELOPMENT

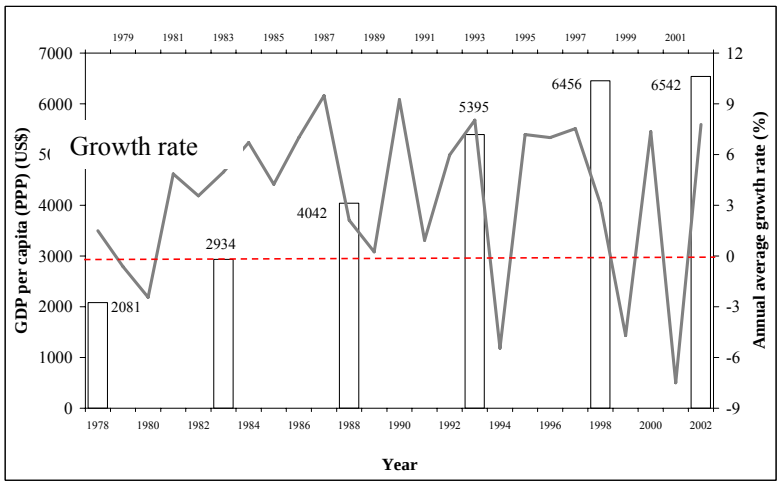
Turkey's economic development has gone through some radical changes since the 1950s. After a decade of an unplanned economy during a decade, the country embarked on 'import substitution industrialization' policy during 1960s and 1970s (Ahmad, 2003). These inward-oriented economic policies were characterized by protectionist import-substituting domestic capital formation and considerable state intervention. New policies succeeded in creating an internal market for its good but failed to be competitive in international markets. During the second half of the 1970s, Turkey witnessed declining economic growth, unprecedented high inflation, unemployment rates and significant trade deficit. The 1978-80 debt crises marked the end of the inward orientation of the Turkish economy. Also compounding with political and social unrest, the unfavorable economic developments laid ground to the third military intervention in 12 September 1980 (Çeçen, et. al, 1994; Celasun, 1998). The military regime of 1980-1983 ended party politics and established a new basis for economic policy in the direction of 'global market forces'. In fact, already before the establishment of the military regime, the 24 January 1980 economic program marked the transition to an export-oriented strategy and neo-liberal economic development model.

The economic policies of the 1980s produced remarkable outcomes. Turkey began to extend its economic ties, beyond the more familiar terrain of the Balkans, the Middle East, the Caucasus and Central Asia. The outward oriented trade policy has progressively facilitated inflow of imported consumer goods and foreign capital as well as boosted export. In this way, the integration into the world markets hastened the transition from agriculture to industry-based economy. From the beginning of the 1980s to the 2000s, the share of agricultural sector in Gross National Product has declined from 31 to 19 percent. In the same period, the share of

industry has increased 18 to 24 percent and the share of service sector rose from 52 to 57 percent.

Along with the implementation of neo-liberal economic policies, respectable economic growth rates were achieved until the end of 1980s (World Bank, 2006). Considering the post 1980 economic development of Turkey, Boratav et. al. (2000) distinguishes two broad phases: 1981-1988 and 1989 onwards. The main characteristic of the first phase was structural adjustment with export oriented growth and suppression of wages. Figure IV.3.b.1 shows that the Gross Domestic Product (GDP) per capita which constantly increased between 1981 and 1987. As a result, it almost doubled from 1978 to 1988. Inflation, a chronic problem of Turkish economy until recent years, was around 40 percent in this period (IMF, 1998).

Figure V.1.1. Gross Domestic Product (GDP) per capita (PPP) (US$) and annual average growth rate of GDP in percent (at constant 1987 prices), 1978 to 2003, Turkey



Source: State Planning Organization, 2007
Note: Average annual growth rate of GDP is growth rate over the previous year. 'Purchasing Power Parity', used to calculate GDP per capita (PPP), is based on OECD estimation

However, a strong institutional legal infrastructure for a well functioning market economy was not yet formed (Öniş, 2004). During the end of the 1980s fiscally damaging populist economic policies were pursued due to increasing

political competition in the country. As all macro economic growth indicators seriously slowed down, the first period reached its economic and political limits by 1988.

1989 was a crucial year segmenting the post 1980 economic development patterns of Turkey (Borotav, et. al., 2000). In 1989, the domestic asset markets were opened up to global financial competition with elimination of controls on foreign capital transactions and the declaration of convertibility of the Turkish Lira. Inflation raised a higher level between 1989 and 1993 at 65 percent (IMF, 1998). The 1990s were characterized by severe macroeconomic instability; volatile growth, deterioration of the fiscal balances and post crisis adjustments, high and sustained inflation, continuing public deficits and high real interest rates.

Following 1988, there were four major shocks in the Turkish economy. The first one was in 1991 due to the adverse effects of the Gulf War (Berument, et. al., 2005). The loose monetary policy and excessively growing public fiscal deficit resulted in a second economic crisis in 1994. GDP per capita dropped nearly 6 percent, Turkish Lira severally depreciated (70 percent) (Demirkol, 2000) and inflation increased to 85 percent (IMF, 1998).

The recovery from the 1994 crisis was quick and in the following year the growth rate of GDP was more than 6 percent. During 1999, there was a third recession; in the first half of 1999, the Turkish economy felt the delayed effect of the Russian crisis. In the second half, two major earthquakes struck the eastern Marmara region, the industrial heartland of the country, and caused substantial adverse effects on output and employment. The 1999 economic depression resulted in -4.7 percent GDP growth rate.

The main factor shaping the developments of the Turkish economy in 2000 was the stabilization program that was implemented to reduce inflation. The economy, following the contraction experienced since mid 1998, entered a growth phase. However, liquidity problems triggered the outflow of short-term capital and political difficulties made the implementation of the program difficult (Capital Market Boards of Turkey, 2001). The fourth major shock was the severest financial

crisis in the history of modern Turkey: GDP per capita declined by 7 percent in 2001. In the following years economy rebounded quickly and annual growth rate averaged 8 percent during 2002-2004. Per capita annual income growth significantly exceeded past trends with an average of 6.3 percent (World Bank, 2006).

V.2. LABOR FORCE PARTICIPATION AND EDUCATION

The ratio of economically active population, labor force participation rate, has decreased in the last two decades[1], which means that a significant fraction of the country's labor resources have not been utilized. Labor force participation rates of females are markedly lower than males (see Table V.2.1). Although the decrease prevails both in rural and, less markedly, in urban areas, the proportion of economically active women in district and province centers (16.7 % in 2000 census) are still substantially lower than those in villages (82.3 % in 2000 census). The majority of the economically active female population is employed in the agricultural sector as 'unpaid family workers' (see Table V.2.1). Three main groups constitute the economically non-active female population (15 years of age and over); housewives, students and retirees. Among these categories, the former one composes the largest group with 73.4 percent in 2000.

[1] In fact, accompanying to modernization of economic structure the labor force participation rates have been declining since mid 20th century in Turkey (Tansel, 2001). The decline has been faster in the case of women's participation rates than in the case of men's. Economic theory stipulates that the female labor force participation rate exhibits a U-shape during the process of economic development. Recently some studies argued that an upturn in female labor force participation may be expected in Turkey as well (Tansel, 2001 and Hoşgör and Smith, 2003).

Table V.2.1. Labor force participation rate by sex and economic activities, employment status and reason for not working of female population at census years, 1980-2000

	1980	1985	1990	2000
1. Labor force participation rate				
Male	79.8	78.3	78.2	70.6
Female	45.8	43.6	42.8	39.6
2. Employed female population by economic activity				
Agriculture	87.3	86.5	82.1	75.6
Industry	4.5	4.5	6.8	6.7
Services	7.5	8.7	10.8	17.4
Other	0.7	0.3	0.4	0.3
3. Employed female population by employment status				
Regular or casual employee	13.9	14.3	17.7	24.3
Self employed	4.7	4.7	7.3	6.0
Unpaid family worker	81.2	80.9	74.8	68.8
Other	0.1	0.1	0.2	0.9
4. Female population not in labor force by reason for not working				
Retired	1.2	1.3	1.7	4.2
Housewife	85.1	84.3	82.1	73.4
Student	11.6	13.0	14.9	19.4
Other	2.1	1.4	1.3	3.0

Source: State Institute of Statistics, 2000

Notes: 1. Number of persons in labor force per 100 persons. Unknown is not included.
2. Employed population are the persons who take place in an economic activity at least one hour in the reference period either as a regular or casual employee or as unpaid family worker for an income either in kind (good) or in cash (money) and who is 15 years of age and over. Economic Activity: the kind of activity that the employed person does (administrates) at an organization, institution, home etc. for an income either in kind (good) or in cash (money). Economic activities are 1) Agriculture: agriculture, hunting, forestry, fishing 2) Industry: mining and quarrying, manufacturing, electricity, gas, water, 3) Services: Wholesale and retail trade, restaurants, hotels, transport, communication, storage, finance, insurance, real estate and business services, community, social and personal services, 4) Other: construction and activities not adequately defined.
3. 'Regular and casual employee': The persons who work at somebody else's job in order to get an earning in kinds (goods) or in cash (money) with wage or salary; or employed with an employer, or working seasonally or irregular at or when she finds job. 'Self employed': Persons who are working for an income either in kind (good) or in cash (money) at his own business, field, vineyard, grocery, office workshop, repair-shop, etc. on his own or with unpaid family members (without employing anybody with wage or daily wage). 'Unpaid family worker': Persons who are working at a business managed (owned) by a family member and showing activities for the market, without being paid, but not as a partner of the business.
4. 'Retired': Persons, 25 years of age and over, who have retired from a social security organization and in the reference period who are not working and not seeking jobs. 'Housewife': Persons, 12 years of age and over, who are not working and not seeking jobs in the reference period because they are busy with their house's work. 'Student': Persons, 12 years of age and over, who are not working and not seeking jobs in the reference period because they are attending an education institution. 'Other': includes "income recipients" and for 2000 Population Census, "Sought a job, without using working any channel in the last three months".

One of the most important reasons behind the declining labor force participation rate in Turkey is the withdrawal of the younger population from the labor force due to increasing level of education (see Table V.2.2) (SIS, 1995). There have been notable improvements in educational attainment for the male, and more markedly, for the female population in the last 25 years.

Table V.2.2. Percentage of population in the 25-29 age group by attained education level, 1975 to 2000, Turkey

	1975	1980	1985	1990	2000
Male					
Illiterate	10.7	6.9	3.9	3.4	2.2
Literate but no school completed	7.5	3.4	2.6	1.4	1.5
Primary School	59.1	59.7	58.6	55.6	44.0
Junior high school or vocational school at junior high school level	7.7	9.1	9.7	12.6	14.2
High school or vocational school at high school level	10.6	12.3	17.1	19.6	25.4
Higher Education	4.4	8.6	8.1	7.4	12.7
Female					
Illiterate	47.2	37.8	20.1	16.5	9.6
Literate but no school completed	5.6	5.1	6.4	3.1	3.0
Primary School	37.2	43.3	55.4	58.4	54.5
Junior high school or vocational school at junior high school level	3.2	3.7	4.6	5.8	7.7
High school or vocational school at high school level	5.4	7.2	9.7	12.3	15.9
Higher Education	1.4	2.9	3.8	3.9	9.3

Source: State Institute of Statistics, 1995 and 2000
Note: Indicators about education level are usually given for the age range 6 and over thus they include both very young and old populations. However, the indicators are given only for age group 25-29 in this table. In a transitional society, the age structure changes over time as well as different generations acquire different educational characteristics. Characteristics of age group 25-29 may provide less spurious image for current educational achievement (on the census date). By these ages, a typical person could have been graduated from the highest education category; a university or other institution of higher education.

Male illiteracy, and more markedly, female illiteracy have decreased from 1975 to 2000. As a result of this improvement, the gender difference in illiteracy rates was reduced from 36.5 percentage points in 1975 to 7.4 percentage points in 2000. Nearly 3 out of 5 males were primary school graduates in 1975. This

proportion was reduced to 44 percent in 2000 due to increases in the proportions with higher than primary education[2]. The proportion of female graduates in all education levels has increased in the last 25 years. Especially raise in the higher level of education, from 3.9 percent to 9.3 percent from 1990 to 2000, is a remarkable improvement. Overall, the proportion of male population with junior high school, high school and higher education is higher than for the female population, indicating that a higher share of males continue their education after the primary level.

Apart from education, there are other factors affecting women's labor force participation. Firstly, urbanization has wide implications on general labor force participation and in particular on women's economic activities. The nature of work in urban areas requires higher education and human capital than in rural areas. The low level of education and experience constitutes the major obstacle for women to participate in the formal sector in urban areas. Those migrant women who had previously been unpaid family workers become housewives in urban areas, thereby they move from being in the labor force to being in the non-participant category.

Secondly, social factors like traditions and customs that hinder women's work outside home and unfavorable conditions of many work places preclude urban women to involve into the informal economy. Traditional specialization in the domains of the market stipulates that men are taking responsibility of bringing home earnings and women are taking responsibility of maintaining home and rearing children. Thirdly, the labor force participation of young men, aged 15-19 as any second breadwinner, is a substitute for women's work among urban poor. Fourthly, there is widespread practice of underreporting[3] of work in cities and in the informal sector (Bulutay, 2002).

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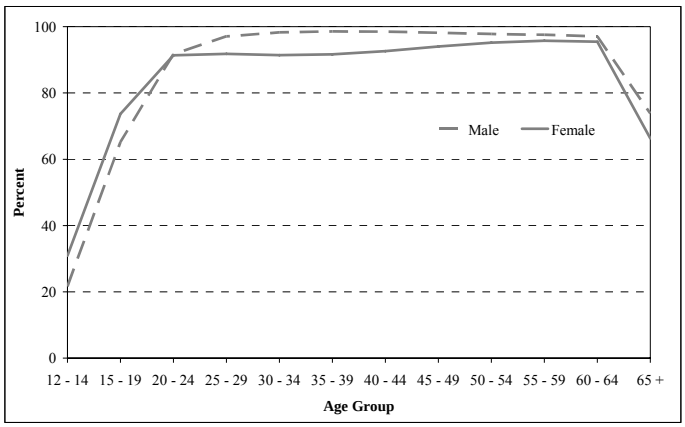
[2] Until 1997, duration of the primary level education was 5 years in Turkey. Beginning from September 1997, primary education extended to 8 years (Smith and Gündüz-Hoşgör, 2006). This change in the system might have effected the figures too.

[3] Labor force participation and the level of unemployment on the basis of response to the 'Household Labor Force Surveys'. Women doing housework, child workers and those who work on informal basis may not be included in the labor force figures (World Bank, 2000; Tansel, 2001). Along with the implementation of the structural adjustment policies during 1980s, labor practices shifted towards flexible forms where part-time, temporary workers and home-workers became more common in urban Turkey. Since labor of women is less costly and more flexible, especially labor intensive export-oriented industries like textile increasingly opt for female labor. Moreover, those who respond the surveys are the household heads, i.e. the men, may prefer not to mention that their wife or children

Economic activity shows divergent patterns for males and females by the administrative regions in the country. Beginning from, ages 12-14, both males and females participate in economic life in villages and sub-districts (see, Figure V.2.1). The percent of economically active population reaches its highest level at ages 20-24 for females and 25-29 for males. Between ages 20-64 participation rate is high and more or less stable for both sexes.

Figure V.2. 1. Ratio of economically active population by sex and age groups, sub-districts and villages in Turkey in 2000 census



Source: State Institute of Statistics, 2000

In urban areas, districts and province centers, a quite different pattern is prevalent (see only for province centers, Figure V.2.2). Economic activity of men displays a steady increase from age 15-19 to up to age 40-44 and declines steadily thereafter. On the other hand, unlike in the villages and sub-districts, female economic activity exhibits a diverse pattern than that of males. The participation increases to its highest percentage in the age group 20-24 and steadily declines afterwards. Overall, female participation is substantially lower than for males at each group. According to Bulutay (2002), the pattern of economic activity of females implies that working young women in urban places have a tendency to leave the

working under informal conditions. It has been established that even working women themselves may not consider their work as 'employment' and declare themselves as 'housewives' (Bulutay, 2002).

labor market after marriage and/or having children. Marriage may inhibit labor force participation of a woman in two ways. Firstly, the presence of a breadwinning husband might reduce a married woman's attachment to the labor market. Secondly, if there are children, child care activity gain more priority and this is a task traditionally attributed to women.

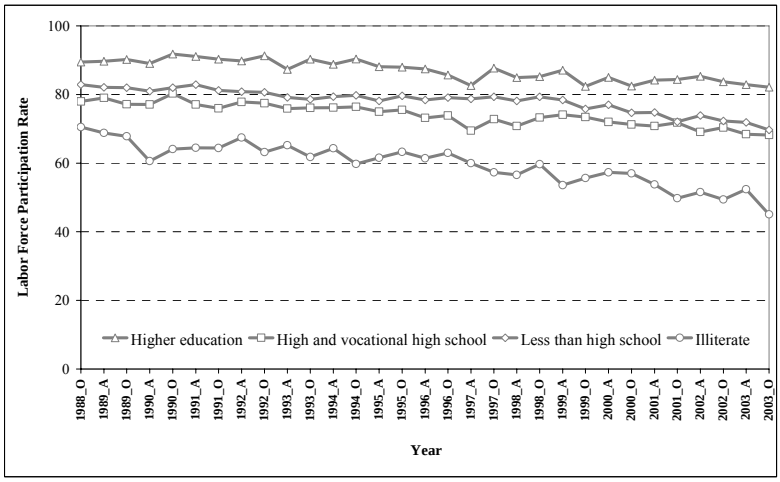
Figure V. 2.2. Ratio of economically active population by sex and age groups, province centers in Turkey in 2000 census

Source: State Institute of Statistics, 2000

The relationships between labor force participation and education in Turkey are examined with Figures V.2.3 to 6 for male and female population separately. As seen in these figures higher level of educational attainment increases the likelihood of labor force participation. But this is significantly relevant for women only in their early productive years. In later years, only a university degree appears to make a difference (World Bank, 2000). A decreasing trend for participation among the better-educated women since 1990s is evident too.

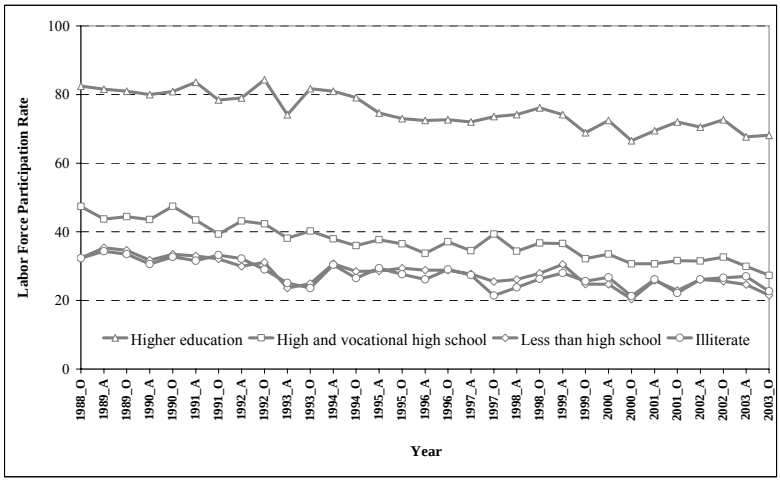
The participation of the illiterate population, regardless of sex, is the lowest. It shows a steeper declining trend since the end of the 1980s. Illiterate women and women with less than high school has considerably lower participation rates than their male counterparts in urban areas (see Figure V.2.5 and 6). However, their very low level of participation could also be related to underreporting as mentioned above.

Figure V. 2.3. Labor force participation rate by education level, male population, Turkey, 1988-2003



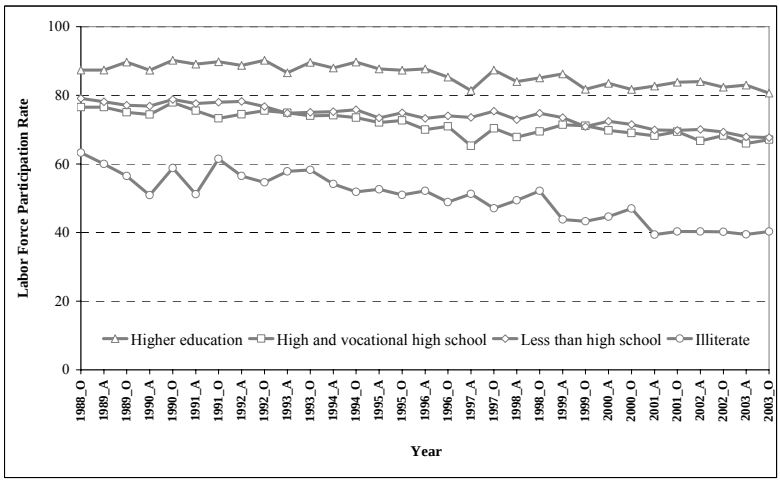
Source: Turkish Institute of Statistics, 2007
Note: Figures based on the result of Household Labor Force Survey and based on population age 15 and over. Figures with 'A' refers to April and 'O' refers to October of the respective year.

Figure V. 2.4. Labor force participation rate by education level, female population, Turkey, 1988-2003



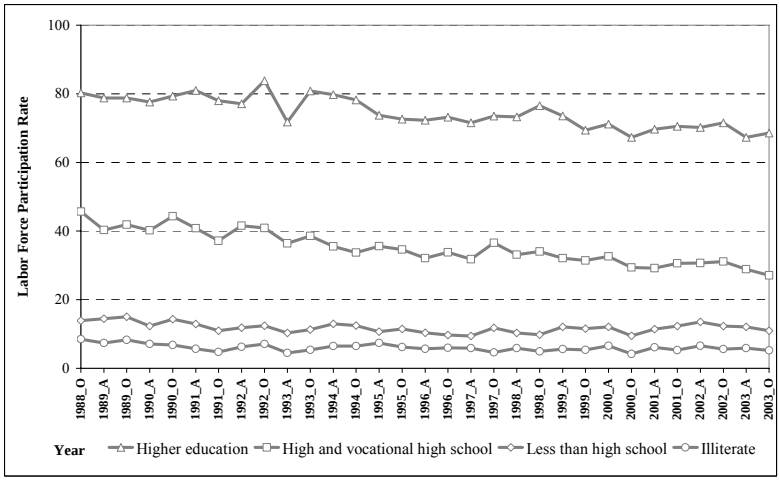
Source: Turkish Institute of Statistics, 2007
Note: Figures based on the result of Household Labor Force Survey and based on population age 15 and over. Figures with 'A' refers to April and 'O' refers to October of the respective year.

Figure V. 2.5. Labor force participation rate by education level, male population, Urban, 1988-2003



Source: Turkish Institute of Statistics, 2007
Note: Figures based on the result of Household Labor Force Survey and based on population age 15 and over. Figures with 'A' refers to April and 'O' refers to October of the respective year.

Figure V. 2.6. Labor force participation rate by education level, female population, Urban, 1988-2003



Source: Turkish Institute of Statistics, 2007
Note: Figures based on the result of Household Labor Force Survey and based on population age 15 and over. Figures with 'A' refers to April and 'O' refers to October of the respective year.

V.3. UNEMPLOYMENT

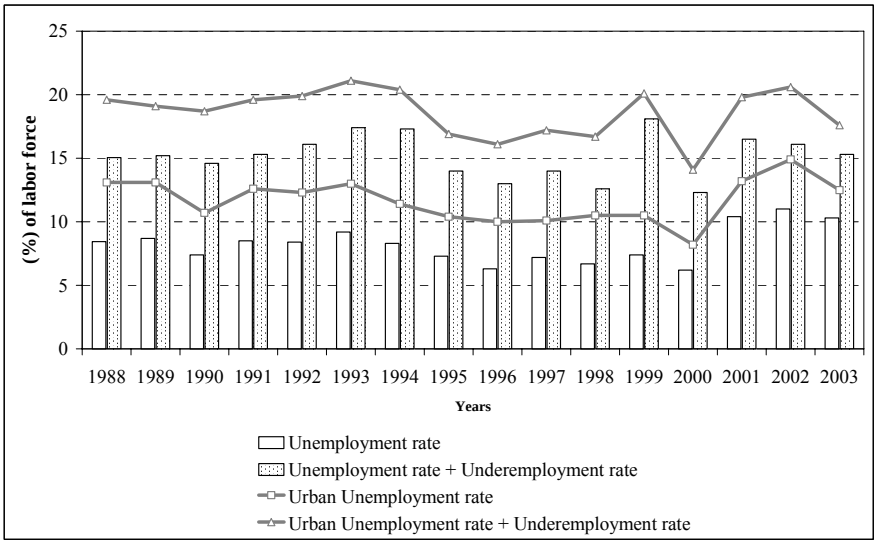
The Turkish labor market is characterized by high labor force growth. Turkey has been successful in maintaining positive GDP growth rates, except for volatile crisis years, since the beginning of the 1980s. On the other hand, it has been less successful at generating employment. A moderate Gross National Product growth rate, with an average of about 3.5 percent per annum, characterized the 1990s. On the other hand, annual employment growth was only about 1.5 percent (World Bank, 2000). Economic shocks of the 1990s have had negative effects on labor markets, since Turkish financial and labor markets are not heavily regulated (Berument, et. al., 2005). For example, the total number of unemployed individuals was estimated to be around 1.5 million in 2000 and 1.9 million in 2001. The 2001 crisis was the deepest recession of the last fifty years and resulted in the doubling number of unemployed individuals in two years, exceeding 2.8 million during the first quarter of 2003 (Tunalı, 2003). Meanwhile, the standard of living of those who maintained their jobs eroded as their real wages came down. Wage inequalities increased and the lack of adequate safety net for unemployed began to threat the social contract.

Unemployment rates have been considerably lower in rural than in urban areas due to weaker qualifications needed for employment in the agricultural sector. Over 70 percent of the rural workforce was employed in agriculture in 2001. Also, mainly as a result of migration to urban areas, the rural labour force dropped from 11.4 million in 1990 to just under 10 million in 2000. Women have traditionally been economically active in family-owned farms, whereas young men have sought work outside agriculture to supplement farming income (Tunalı, 2003).

As Turkey's economy has been transformed from agriculture based to industry and service based structure, the employment opportunities in urban areas gain more preeminence. Between 1988 and 2000, the annual unemployment rate in urban areas of Turkey hovered around 10 percent (see, the Figure V.3.1). In general, urban unemployment has been fairly stable for males and has been on a declining trend for females. The last 2001 crisis boosted urban unemployment to 15 percent in

2002. The unfavourable effect of the 2001 shock was clearly visible for both sexes yet the share of those who lost their jobs registered a bigger increase for females (Tunalı, 2003). The high level of the underemployment rate, a measure of unemployment that adjusts for those who involuntarily work only a few hours per week, aggravates the unemployment problem in Turkey.

Figure V.3.1. Unemployment and Underemployment in Turkey and Urban Turkey, 1988-2003



Source: Turkish Statistical Institute, 2007
Note: Unemployment data collected via the Household Labour Force Surveys (HLFS). To get classified as unemployed, an individual has to satisfy three criteria: 1. did not work during the reference week; 2. searched actively for a job during the past six (1988-99) or three (2000-2002) months; and 3. is ready to start work in 15 days. According to this definition those who have found a job and are about to start working are classified as unemployed. The reference week was fixed week in April or October in the biannual surveys (1988-99). Unemployment Rate is number of unemployed persons per 100 persons in labor force. Underemployment rate is ratio of persons who work less than 40 hours because of economic reasons during the reference period and are able to work more. The reference population is the noninstitutional civilian population, ages 15 and over.

An important mechanism of long term unemployment in the urban fabric was the replacement of owner-operated small businesses and shops, like grocers, haberdasheries, bakeries, carpentry, plumbing and other repair shops etc., by larger supermarkets. According to Ahmad (2003), the last two decades of Turkey has been the age of '*economic Darwinism*', -survival of the fittest- as small and weak firms,

were eliminated or swallowed up in mergers. In this course of change, to be a self-employed entrepreneur has become quite difficult. Thereby, reduced opportunities for family employment have mounted urban poverty and long-term unemployment (Erder and Güvenç, 2000, Pamuk, 2007).

There have been problems related to political and social developments that have aggravated poverty too. Military conflict in the southeast Anatolia, populated dominantly by Kurdish speaking population, has had a crucial effect on the emergence of new urban poverty (Buğra and Keyder, 2004).

Unemployment rates of females vary considerably by level of education. Because unemployment on the whole appears to be distributed in proportion to the group's share in the labour force, female unemployment mostly concerns women with high school education and more. However, while female high school graduates are exposed to higher risk of unemployment, female university graduates confront a lower risk. In contrast, unemployment rates vary much less markedly by education for men (Tunalı, 2003).

V.4. HOUSEHOLD INCOME DISTRIBUTION AND CONSUMPTION

Turkey is a country with large and enduring income inequalities (World Bank, 2000, Duygan and Güner, 2006). Table V.4.1 shows the trend of household income distribution since 1978, displaying the percentage distribution of income to quintile segments of households and Gini coefficients. The share of income in the first quintile, the poorest one, has almost doubled in the last two and half decades. In contrast, the share of the richest quintile, the fifth, has dropped slightly from nearly 55 to 48 percent in the same period. Accompanying to the economic growth, the Gini coefficient, a measure of inequality, declined from 0.51 in 1978 to 0.42 in 2003[4].

[4] There is a notable worsening in the 1994, due to financial crisis in that year.

Table V.4.1. Household income distribution in Turkey: 1978 to 2003

	First quantile-%20	Second quantile-%20	Third quantile-%20	Fourth quantile-%20	Fifth quantile-%20	Gini coefficient
1978	2.9	7.4	13.0	22.1	54.7	0.51
1983	2.7	7.0	12.6	21.9	55.8	0.52
1986	3.9	8.4	12.6	19.2	55.9	0.50
1987	5.2	9.6	14.1	21.2	49.9	0.43
1994	4.9	8.6	12.6	19.0	54.9	0.49
2002	5.3	9.8	14.0	20.8	50.1	0.44
2003	6.0	10.4	14.5	20.9	48.3	0.42

Source: State Planning Organization, 2007
Note: While Gini coefficient approaches to zero income distribution becomes fairer, while it approaches to 1, income distribution becomes unfair.

When Turkey is compared with other developing countries the level of inequality does not look so excessive (Duygan and Güner, 2006). Absolute poverty, proportion of population living on less than "One-Dollar-a-Day", is at very low level: only 2.5 percent of the population. However, economic vulnerability is widespread. A substantial proportion of households (31 percent) and an important fraction of the population (36 percent) had consumption below the economic vulnerability line[5] during the mid-1990s (World Bank, 2000).

A comparison of Turkey with other developed countries shows that the main difference in earnings distribution arises from larger share of the income received by the top 20th quintile and lower shares for the middle-income group (households in the 3rd and 4th income quintiles). The income shares of the bottom 1st and 2nd quintiles are quite close to developed countries in general.

Sources of income inequality

The main factors underlying income inequalities in Turkey are related to changing labor market structure and specifically the growing wage differentials by educational attainment (Duygan and Güner, 2006). Indeed, the two critical variables,

[5] Economic vulnerability line is approximately equivalent to twice the level of the minimum food basket-or about U S$190 per household per month (World Bank, 2000).

education and employment status, each explain between a fifth and a quarter of all observed inequality (World Bank 2000). Household incomes from wages increase since the end of the 1980s. The change in wages affects the households in the lower part of the distribution more than those at the top, because the latter often acquire an additional income from financial assets, too.

A household's likelihood of economic vulnerability is positively related to employment in seasonal or casual jobs and illiteracy (World Bank, 2000). According to Duygan and Güner (2006), among the households in the poorest quintile, more than 70 percent of the household heads have at most primary education while 95 percent of their spouses have at most primary education. Among the households in other end of the income distribution, 50 percent of household heads and 40 percent of their spouses have at least a high school degree. The educational attainments of husbands and wives are quite similar at both ends of the income distribution.

VI. MAIN LANGUAGE GROUPS IN TURKEY

VI.1. SIZE AND SPATIAL DISTRIBUTION

Modern Turkey was founded on the land of the Ottoman Empire, which had a complex multi-cultural social structure. Therefore existence of different ethnic groups[1] is one of the important features of Turkey. According to Andrews (1989) although exact size and distribution of is not very well known, the contemporary Turkish population comprises 51 ethnic/language groups.

Information on the size and distribution of language groups[2] can be obtained from three main sources in Turkey. Each source has its advantages and drawbacks. First one is the population census, which provides nation wide information. Beginning from the first population census, carried on in 1927, mother tongue questions were asked to all individuals enumerated until the census carried out in 1990. Nevertheless, after the 1965 census, the national data on mother tongue was not publicized. Therefore, the census results are outdated for the current circumstances.

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[1] Classification of ethnic groups requires a complex, and often, ambiguous procedure when sole information is based on 'mother tongue' of the individuals. This approach does not necessarily reflect the full spectrum of ethnicity concept (Wiessner, 2002). However, due to lack of alternative or supplementary data, several studies used the mother tongue information as an adequate proxy of ethnicity in the Turkey's context. In these studies, the researchers, apart from the language information, have designated ethnic groups with using some other additional assumptions (see how ethnicity categories formed from mother tongue information in, Mutlu, 1996; Dündar, 1998; Sirkeci, 2000; Hoşgör and Smits, 2002). Considering the paucity of relevant data such procedures can be accepted as a proper method. However, we opt for to use the term 'mother tongue groups' instead of 'ethnic groups' throughout this study. In this study sometimes mother tongue and ethnicity terms can be used together due to the cited literature.

[2] Since the beginning of 1990s, there has been growing interest to study ethnic structure of Turkey. However, majority of these studies have been politically driven in terms of quantifying the sizes and presenting spatial distribution of the ethnic groups. Rather than being based on scientific grounds they are usually highly speculative (Koç and Hancıoğlu, 1999). This kind of information is based mainly on some 'expert' opinions, reflecting intuitive guesses (İçduygu and Sirkeci, 1999) and usually does not depend upon any precise reference, data analysis or explanation. Therefore, we prefer not to disseminate this sort of figures in this study. Some collection of different numbers from diverse studies can be seen at Bruinessen, 1992 and Akyol, 2006.

Mother tongue question was asked among the questions on the social and personal characteristics of the population in the censuses. The following definitions were used as 'mother tongue' and 'second language' in the censuses:

Mother tongue

The mother tongue is the language usually spoken among the members of the household. The mother tongue of children who are not able to speak is taken as the language of the parents.

Second language

The second language is the language spoken by the household other than the mother tongue. If more than one language is spoken, the best known is taken as the second language. (State Institute of Statistics, 1966).

Second source is projections that based on the latest census data. They also provide nationwide results but they refer only to the beginning of 1990s.

Table VI.1.1 gives the size distribution of the mother tongue groups in Turkey according to 1935 and 1965 population censuses and a projection referring to year 1992. Whereas the Turkish speaking population is the largest group with nearly 90 percent, the Kurdish speaking group constitutes the second largest language group with 7.6 percent for the 1965 census findings. In the same census, 1 753 161 people declared their second language as Kurdish (Dündar, 1998). They most probably had adopted Turkish language over time as mother tongue but not totally forgotten Kurdish as well. Adding up this figure to former one, 13.2 percent were able to speak Kurdish language as mother tongue or second language in 1965.

According to Mutlu (1996), the census data in general do not provide high quality information on the mother tongue groups. Especially when data is broken down by province-by-province, reliability of the figures becomes more questionable. So as to deal with over- and understatement problems, he proposes to conduct certain

adjustments on data, using fertility and mortality rates. According to his adjusted estimate the percentage of Kurdish speaking group should have been constitute 9.98 percent in 1965.

Table VI.1.1. Size and percentage distribution of the Mother Tongue groups in Turkey; 1935, 1965 censuses and projection for 1992

	1935 (Census)		1965 (Census)		1992 (Estimate)	
Language Groups	**Numbers**	**%**	**Numbers**	**%**	**Numbers**	**%**
Turkish	13 914 688	89.2	28 289 680	90.1	53 575 612	92.0
Kurdish	1 480 251	9.2	2 370 125	7.6	3 620 458	6.2
Arabic	153 687	1.0	365 340	1.2	796 437	1.4
Caucasian	222 029	1.4	123 239	0.4	72 371	0.1
W. European	31 029	0.2	42 419	0.1	56 205	0.1
E. European	109 843	0.7	66 101	0.2	41 850	0.1
Greek	108 393	0.7	48 096	0.2	23 148	0.0
Armenian	57 599	0.4	33 094	0.2	20 098	0.0
Hebrew	42 607	0.7	9 981	0.0	2 703	0.0
Persian	2 053	0.0	948	0.0	473	0.0
Other	34 353	0.2	42 368	0.1	513 169	0.1
Total	16 157 152	100.0	31 391 391	100.0	58 260 523	100.0

Source: Özsoy et. al., 1992
Note: Kurdish category also includes 'Zazaca'. Caucasian langues are mainly are Georgian (Lazca), Circassian. Western European languages are English, French, German, Spanish, Italian and others. East European languages are Bulgarian, Russian, Serbian, Albanian, Rumenian, Bosnian etc.

Özsoy et. al. (1992), using 1935 and 1965 population census findings, have estimated the size of mother tongue groups for 1992 (see, the Table VI.1.1). According to this estimate, as mother tongue; the Kurdish speaking population comprises 6.2 percent of the Turkey's population. When the projected figures of people whose second language is Kurdish (2 611 776) added, the total Kurdish speaking population was calculated as 6 232 234 that comprise 10.7 percent of the total projected population. Authors mentioned that this figure should be the minimum level. When the highest likely growth rate employed in projection, the share of total Kurdish speaking population increased to 7 224 402 that corresponds to 12.4 percent. This figure is

close to another projection estimate done by Mutlu (1996); 12.6 percent referring to the 1990.

According to censuses and projections, the Turkish and Kurdish speaking groups constitute the great majority of the country's population. Therefore, they can be called as the main language groups of Turkey.

Third source is the Turkey Demographic and Health Surveys. The 1993 Turkish Demographic and Health Survey, differently than the previous national demographic surveys, included first time mother tongue and second language questions (Dündar, 1998). Language groups formed in this survey were as follows: Turkish, Kurdish (including Zaza language –Zazaki-), Arabic, Armanian, Circassian, Georgian, Hebrew, Persian, Greek, Laz language and East and West language groups. Questions asked in individual women questionnaire and the respondents gave information about themselves, their parents, their (last) husbands and husband's parents. The same set of language questions has been preserved in 1998 and 2003 Turkish Demographic and Health Surveys. Some researhers studied the size and distribution of the language groups in Turkey from these sources. Since the questions were asked only in the individual ever-married questionnaires, the reseachers had to put some assumptions so as to provide estimates for nation level.

According to Dündar (1998), as by mother tongue: while the Turkish speaking population comprise 82.7 percent, the Kurdish speaking population makes up 13.0 percent of the Turkey's population for 1993. İçduygu and Sirkeci (1999), using different assumptions, have estimated the Turkish speaking and Kurdish speaking populations respectively; 81.6 and 15.2 percents from the same data. Koç et. al. (2008) reported that according to TDHS-1998 and 2003, among the ever-married women 15-49 ages, 83 percent is Turkish and 14 percent is Kurdish by mother tongue (see, Table VI.1.2).

The analysis of Demographic and Health Surveys has provided information on spatial distribution of the mother tongue groups as well. The findings from TDHS-1998 show that whereas the Turkish speaking population lives in all regions, the other groups are concentrated mainly in some particular regions (Table VI.1.3).

As the largest share of the Turkish speaking population lives in West region, the most populous part of the country, the great majority of the Kurdish speaking population (66 percent) lives in East region. The Kurdish speaking population secondly lives in the West region and thirdly in South whereas they are almost non-existent in North region.

Table VI.1.2. Percent distribution of language groups in Turkey from TDHS-1993, 1998 and 2003

	TDHS-1993	TDHS-1998	TDHS-2003
Turkish	82.7	83.2	82.6
Kurdish	13.0	14.4	14.5
Arabic	1.7	1.9	1.9
Other	2.6	0.5	1.0
Total	100.0	100.0	100.0

Source: Koç et. al., 2008

Table VI.1.3. Spatial distribution of mother tongue groups and percentage distribution in total population by TDHS-98

	Regions						
	West	**South**	**Central**	**North**	**East**	**Total**	**In Total Popul.**
Turkish	41.5	14.8	26.9	9.4	7.4	100.0	83.2
Kurdish	15.6	11.8	6.0	0.0	66.6	100.0	14.4
Arabic	11.0	40.2	0.6	0.6	47.6	100.0	1.9
Other	44.4	0.0	11.1	44.4	0.0	100.0	0.5
In Total Population	37.3	14.8	23.3	8.0	16.7	100.0	100.0

Source: Koç and Hancığlu, 1999

In Turkey, the massive internal migration movements have characterized the last 3 decades. Because of the socioeconomic appeals, the direction of this movement has been towards to the West and South regions from all others. As a result of migration, the proportion of the Kurdish speaking population considerably increased in these two regions (see, Table VI.1.3). In the major metropolitan cities of Turkey the proportion of the Kurdish speaking population has been increased from 1965 to 1990: in Ankara 3.8 percent to 6.7 percent; in İstanbul 2.8 percent to 8.2 percent; in İzmir 1.0 percent to 6.9 percent (Mutlu, 1996).

Table VI.1.4. Distribution of Kurdish Population by regions, from census-adjusted figures of 1965 and census based projection estimates for 1990

	1965 (Census)		1990 (Estimate)	
	Number	**% Total Population**	**Number**	**% Total Population**
Marmara	72 650	1.24	810 130	6.09
Aegean	15 770	0.36	296 990	3.93
Mediterranean	190 220	4.98	726 550	8.95
Central Anatolia	262 640	4.13	579 380	5.53
Black Sea	28 720	0.51	37 880	0.50
Eastern Anatolia	1 369 650	38.87	2 230 290	41.96
Southeast Anatolia	1 192 730	64.24	2 365 040	64.98
Total	3 132 390	9.98	7 046 250	12.60

Source: Mutlu, 1996
Note: The regional distribution used in the censuses and Demographic and Health Surveys are not exactly the same. However to great extent, Marmara and Aegean regions in censuses are corresponding 'West' region in DHSs. Similarly, Mediterranean is corresponding to the 'South'; Central Anatolia is corresponding to the 'Central'; Black Sea is corresponding to the 'North' and Eastern and Southeastern Anatolia are corresponding to the 'East' region.

The motives of the migration have been various: economic reasons and resettlement due to large-scale development projects and natural disasters have always been prevalent factors. Additionally, from the mid 1980s to mid 1990s, many villages and hamlets have been evacuated due to security reasons related to internal armed conflicts in the East region (HUIPS, 2006). The Kurdish speaking population

still mainly populates eastern and southeastern parts of the Turkey, though it is more dispersed today than in the past decades.

VI.2. SOCIOECONOMIC CHARACTERISTICS

VI.2.a. Economic activity

In order to state appropriate research questions, we should initially better understand socioeconomic conditions of the main mother tongue groups in Turkey. That is to say, we should consider first their extent of integration into economic, educational and health institutions of the society. For this purpose, we will examine several sources that provide information at both macro and micro levels. At first, we start with the macro level information on the region's socioeconomic development and population composition.

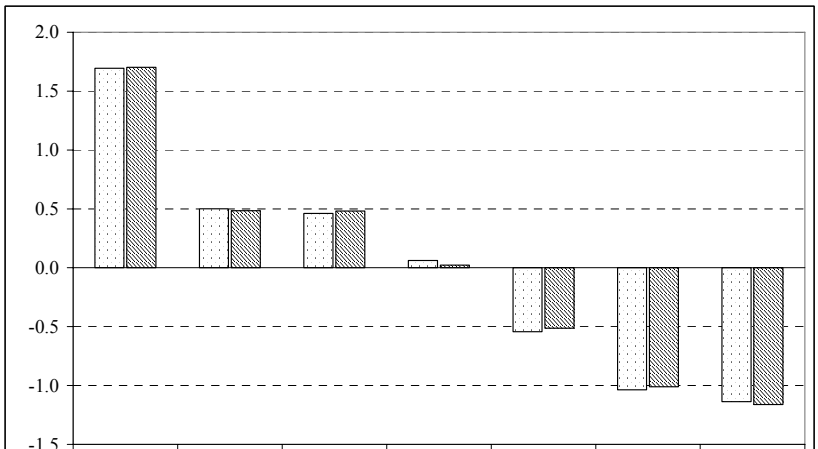
Turkey's economy and social structure substantially changed towards to industrialization and urbanization in the last decades. During the course of this transition, different sections of the population have been affected by social and cultural changes in different ways and at varying paces. The country is still characterized with considerable socioeconomic disparities among its geographical regions (see, Figure VI.2.a.1). Income differentials between rich (western) and poor (eastern) provinces are so large that GDP per capita in the richest provinces are nearly six times higher than in the poorest ones (World Bank, 2000).

Large east-west differences in average socioeconomic development have been accompanied by large and persistent regional inequalities in human development indicators too. The latest Human Development Report for the year 2002 indicates for example that the average HDI of the top 10 high income, western and northwestern provinces, is 0.825, close to the HDI for East-Central European countries. On the other hand, the average HDI of the poorest 10 provinces in the

southeastern part of the country is 0.600, comparable to the HDI of Morocco or India (Pamuk, 2007).

The pattern of economic and social development in West and South regions of Turkey is similar to that of developed countries. Inequality between regions in general lies in the sectoral structure of economy and differences in productivity across these sectors. Prosperous West and South region provinces; like Bursa, Kocaeli and İstanbul in the Marmara region, İzmir in the Aegean, and Antalya, Adana and Mersin in the Mediterranean are characterized by a high concentration industrial, commerce and finance sectors (Tunalı, 2003). Mechanization of the agriculture and connection to market economy began the earliest in these regions. Therefore, they have substantial shares of production and employment in manufacturing and service sectors too.

Figure VI.2.a.1. Socioeconomic development index by regions; 1996 and 2003



	Marmara	Aegean	Central Anatolia	Mediterranean	Black Sea	Southeast Anatolia	East Anatolia
1996	1.694	0.501	0.461	0.062	-0.544	-1.036	-1.137
2003	1.702	0.483	0.481	0.021	-0.513	-1.011	-1.162

Source: Dincer, et. al.2003,
Note: 0.0 level of the socioeconomic development index refers to average socioeconomic development of the country. The index is based on 58 different indicators, covering the following fields: population, employment, education, health, manufacturing industry, construction, agriculture, communication and finance. Principal component analysis was used to estimate the development index. The index values of 1996 are based on the indicators collected between the years of 1990 and 1993. The index values of 2003 are based on the indicators of year 2000.

The economic activity pattern in the North and East regions, are more resemble to developing countries. Employment is generally characterized by agricultural activity. For example, whereas the share of agricultural employment was only 30 percent in West region (Marmara part), this figure was nearly 70 percent in North and Eastern regions in 1990. The agricultural activity also exhibits much lower productivity than in the richer regions due to differences in endowments (land, labor and capital). Mountain ranges in the Black Sea and Eastern Anatolian and the lack of irrigation facilities in the southeastern Anatolia have historically imposed limits on land use and agricultural activity (Tunalı, 2003). Especially the East region has been characterized by husbandry and subsistence level agricultural activity.

Central region represent an in-between case. The agricultural production, governmental activities (Ankara, the capital and the second largest city of Turkey is in the middle of this region) and related expenditures have constituted the local economy. However, the last two decades have also been witnessed a fast process of transformation towards to industrial production and capital accumulation. Kayseri, Konya, Yozgat, Denizli, Çorum and Aksaray are the major provinces where this fast industrialization and integration into market economy is visible nowadays.

VI.2.b. Education

Apart from differential economic activity; the poorest parts of the Turkey has been lacking in infrastructure and social services (Pamuk, 2007). In the last 3 decades, at national level, a high rate of graduation from the primary school has been succeeded due to developments at basic education provision in Turkey. As seen in Table 6, the percentage of primary school graduates[3] is much higher among birth cohort of 1970-75 than among 1950-55 one. The gender difference at the primary school graduation has declined in all regions, except for in the East region. Despite the fact that an expansion also occurred in this region, the share of at least primary

[3] Indicators are given for age group 15-19 for the fact that they have chance to pass through primary education until these ages. Focusing on this age group provide better information of current achievement in this educational category.

school graduates, especially that of females, is still much lower than in the other regions.

According to Şahin and Gülmez (2000) the problems in the field of education basically related to the problems of inequality of educational opportunity: *"Poor economic status, cultural, ethnic and linguistic differentiation, inequality in schooling and the number of students per teacher, geographically dispersed population, and political conditions, as well as indicators of the people's lower social classes such as a higher rate of illiteracy, low income, crowded houses, lacking means of production, gender differentiation in educational issues, were all factors affecting inequality of educational opportunity".*

Table VI.2.b.1. Graduate of at least primary school by birth cohorts of 1950-55 and 1970-75: Five regions and Turkey (Figures are per cent of the age group 15-19)

Birth cohort (Census)	Sex	West	South	Central	North	East	Turkey
1950-55 (1970)	Male	87.2	83.3	87.2	79.8	59.4	80.1
	Female	74.4	55.1	60.1	41.9	28.6	54.6
	M-F*	12.8	28.2	27.1	37.9	30.8	25.5
1970-75 (1990)	Male	97.1	95.2	97.6	96.7	87.0	94.6
	Female	94.8	89.4	94.8	93.0	66.4	87.7
	M-F*	2.3	5.8	2.8	3.7	20.6	6.9

Source: SIS, 1996
Note: * Percentage point difference between male and female at least primary school graduates

These unfavorable conditions seem have been more negatively affected the Kurdish speaking women's educational achievement in Turkey (see, Table VI.2.b.1). According to TDHS-93 findings, the mean year of schooling of ever-married women (15-49) was 4.4 years in Turkey. The mean years of schooling notably differ by mother tongue of women; the Turkish women have had 3.5 higher schooling on

average. Poor educational opportunities seem to have negatively influenced educational career of all women in the East region. However, even under such circumstance the Turkish speaking women's average year of schooling is 2.9 years higher than the Kurdish speaking counterparts. When the primary school attendance and literacy considered, we observe the same pattern of discrepancy between Turkey averages and the East and between Turkish and Kurdish speaking women. In this regard, those women live in the East region, but in particular the Kurdish speaking women have a clear disadvantage[4]. In other words, regarding educational attainment; membership of a language group is more influential factor than merely living in the East region.

The low level educational integration of the Kurdish speaking women has wide ranging consequences. For Dündar (1998) high percentage of illiteracy could explain several attributes of this group; like high infant mortality, lower status of women, lower gainful employment etc. İçduygu et. al. (1999) wrote lack of education and proficiency in Turkish severely limits the Kurdish speaking population's socio-economic opportunities and this augment material insecurity feelings.

Table VI.2.b.2. Educational status of ever married women (15-49) by main language groups in Turkey and East region in 1993

	Years of schooling	Never attended primr. or incomp.	Percent literate
Turkey	4.4	33.7	75.8
Turkish	4.9	26.7	82.5
Kurdish	1.4	78.2	32.1
East	2.5	62.7	46.7
Turkish	4.1	39.4	70.6
Kurdish	1.2	81.5	27.2

Source: Dündar, 1998

[4] In the high level education, secondary complete and higher, asymmetry between the Turkish and Kurdish speaking population is also visible: while only 6 percent of the Kurdish speaking population had attained this level, the corresponding figure for Turkey average was about 25 percent according to TDHS-1993 findings (Sirkeci, 2000).

According to Smits and Hoşgör (2003) illiterate Kurdish women have much less chance to learn Turkish and this turns out to be a major obstacle of accumulating further human capital. Their study show that the Kurdish speaking women who don't know Turkish have a lower probability to be gainfully employed due to fact that formal economy requires ability to speaking (or reading) Turkish. These women are more likely to live in rural areas and work in agricultural sector.

VI.2.c. Health

Health indicators, colleted via demographic and health surveys through 1990s, have shown that integration of the Kurdish speaking women to health system of Turkey is at lower level than of the Turkish speaking counterparts (Dündar 1998; Koç and Hancıoğlu, 2000). The Kurdish speaking mothers receive much less antenatal care from health professionals during their pregnancies; less likely to deliver children at medical institutions and be assisted at delivery by a health professional. The inadequate access to this prenatal care services mainly related poor welfare status, lack of education and rural life conditions (Cindoğlu and Sirkeci, 2001).

There are also apparent differences in terms of child mortality experience between the Kurdish and Turkish speaking women. Survival chances of the Kurdish speaking women's children are lower especially for the post-natal period. According to TDHS-1998 findings, the infant mortality rate among Kurdish children is 60 percent higher than Turkish children (Koç and Hancıoğlu, 2000). When the analysis confined only to East region, poor conditions of the region worsen the prenatal health care and childhood mortality indicators for two mother tongue groups. However, the child mortality rate of the Kurdish children is higher than their Turkish counterparts in this region too.

VI.3. SOCIO-CULTURAL CHARACTERISTICS

VI.3.a. Patriarchy and gender relations

An important outcome of the socioeconomic changes in Turkey has been the breakdown of the traditional, land-based, patriarchal system that overall has had a liberating effect on women (Kandiyoti, 1977). However, the different sections of the population have been affected by social and cultural changes in different ways. Along the scale of socioeconomic status, regional and mother tongue diversification, a contrast between 'modern' and 'traditional' cultural features has been maintained in Turkey. Modernization of agricultural production and socioeconomic integration to national market for the southeastern region of Turkey is relatively a recent phenomenon. The predominant characteristic of the East region until the very last decades have been the social and economic life based on tribal lines divisions and domination by local big land owners and religious orders (Ergil, 2000, Gündüz-Hoşgör and Smith, 2007). The Kurdish speaking population has largely remained the least affected group from the ongoing social changes and thus the traditionalism and religiousity[5] is more widespread among this group.

After the 1980s, three main cultural groups can roughly be distinguished where the status of women varies each other (Tekeli, 1995). The first cultural group is composed by urban, industrialized segments of society in which more or less

[5] In a recent study on religion, society and politics in Turkey, Çarkoğlu and Toprak (2006) states that the religiosity level among the Kurdish speaking population is higher than the Turkish speaking population. Religiosity has also been mentioned in some other studies too as a more visible attribute of small towns and rural areas, of the eastern and southeastern parts of the East region and in general among the low educated people (Aytaç, 1998). Religiosity seems to be highly related to place of residence and socioeconomic characteristics of these groups: *"Similar to arguments about a "center-periphery" cleavage, we found that two clearly distinguishable groups oppose one another on almost all important issues. On the one side, we have urban dwellers of better socio-economic status and education who do not feel bound by Sunni religious belief system. On the other side, we have religiously devout people of lower education and socio-economic status who feel closer to the Islamists rather than the secularists. These distinct groups would seem to get closer to one another with urbanization, economic development, and modernization."* (Çarkoğlu and Toprak, 2006).

modern/Western values have been internalized as a new value system. In this group, both the family and individual appear to have more autonomy and hence the women have achieved a more egalitarian status with men. New opportunities of vertical and lateral social mobility and progressively rational based decisions in behaviors are the two important characteristics of this group. The second one is identified as traditional rural culture in which women and children status is generally remained low for the strict control of individuals by the social values based on classic patriarchy.

The third cultural group distinguished according to women's status by Tekeli (1995) is the 'new urban' cultural group that remains at the intersection of the two other groups. This group might be seen as a transitional one at first glance. However, in some cases, the dramatic value conflicts and contradictions[6] could even amplify the social and familial pressures on the women (and children) more severely than those experienced in the rural culture.

It seems that to a great extent, these two distinctive women statuses overlaps with the main mother tongue group's observed experiences in Turkey (see, Table VI.3.a.1). The influence of traditionalism at marriage formation is much more notable among the Kurdish speaking women, implying that their experience would fit more to Tekeli's (1995) second and third groups. The finding can be attributed to lower socioeconomic life conditions of this group compare to the Turkish speaking one. Nevertheless, Dündar (1998) also compared these two groups of women's statutes by their literacy ability as well. Regardless of to be literate or not, the percentage of Kurdish speaking women who have taken brides money is again found higher both in Turkey and East region. This finding implies that the socioeconomic differences may not be sufficient enough to explain prevalent differences of traditionalism at marriage formation.

[6] In a latest qualitative study on 'honor killings' in Turkey the young man, especially those who had migrated to the city from the rural areas observed as emphasizing more strongly the control of women in the way they dress, schooling, working, with whom they should be friends etc. (Population Association et al.; 2005)

Table VI.3.a.1. Percentages of socio-cultural attributes of marriage formation of ever married women (15-49) by main language groups in Turkey and East region in 1993

	Cultural attributes		
	Payment of brides money	**Consanguinity**	**Arranged marriage**
Turkey	28.6	22.6	67.8
Turkish	22.5	19.9	65.6
Kurdish	67.2	39.1	82.5
East	59.4	34.3	74.3
Turkish	44.7	23.6	74.6
Kurdish	69.5	41.3	83.9

Source: Dündar, 1998

VI. 3.b. Knowledge of Turkish as second language among Kurdish speaking women

In recent years, several sociological studies in Turkey, investigating socioeconomic and gender status characteristics of the Kurdish speaking women, indicated that ability to speak official and dominant Turkish language can make substantial changes in the life of the Kurdish speaking women in several ways.

According to Ertürk (1995), the development projects, implemented by central government in this region, has been lack of a gender dimension. She argues that in the recent course of modernization, contrary to expectations, the Kurdish speaking women are seen to be remained in an alien situation and the conventional methods of 'patriarchal bargaining'[7] have become ineffective. During the course of modernization in agricultural production typical traditional agricultural tasks of men turns out to be capital-intensive work over time. On the contrary, the women's work

[7] Different forms of patriarchy present different set of concrete constraints to women. Each setting has distinct "rules of the game" and call for different strategies with varying potential for active or passive resistance in the face of oppression. Thus, women differently strategize and optimize life options to maximize their security and social position. Kandiyoti (1988) identify this negotiation process as 'patriarchal bargains'.

to great extent has remained labor-intensive that reduce the status of women as unpaid family laborer.

The condition of the Kurdish speaking women, those of over 30 years of age, would have been further worsened since many of these women do not able to speak official language; Turkish. Considering the Kurdish speaking women lack of schooling facilities severely decrease the opportunity of learning official language. On the other hand, the Kurdish speaking males have more chance; if not in schools, they can learn during army service or in migration. As the social and economic contacts with outside world gains intensity and new dimensions with modernization, the Kurdish speaking women, who don't know Turkish, has became more dependent upon local power structures; essentially on male members of households (Smits and Gündüz-Hosgör, 2003). For example, surrounding strong traditionalism augments its effect with inability to use official language and this prevents women to use their legal rights for themselves and for their children. The interaction with "outside" world is more limited and controlled by their own family, by their husband and his family and/or even by the other members of their tribes due to high influence of the patriarchal cultural values stipulating gender disparity. In contrast, position of the Kurdish speaking men, who commonly able to speak Turkish, have been more reinforced in the meantime due to fact that they can solely cope with the demands of modern secular institutions outside households

Ayşe Betül Çelik's (2005) qualitative study on the Kurdish speaking migrant women in İstanbul provides some insights about the conditions of this group. The author asserts that linguistic barriers and illiteracy combined with general unemployment have driven most the migrant Kurdish speaking women into the category of "urban poor", which has difficulties with social adaptation to urban life. In this metropolitan environment the nature of social inclusion/exclusion, gender identity and employment patterns are varied by age, level of education and linguistic/religious identities of the women. For instance, while some younger Kurdish speaking women participate into the labor market through informal economy and low paid-in house jobs, the older and illiterate women are encapsulated in their household or close community life as in the rural areas of East region.

Smits and Hoşgör, (2003) reported that, according to TDHS-1998 data, the Kurdish speaking women who live in the West, Center and North regions, almost all are able to speak Turkish. In the South region, 85 percent knows Turkish as a second language. In the East region, the ratio of Kurdish speaking who know Turkish decreases to 68 percent. Therefore, majority of the Kurdish speaking women, who don't know Turkish, live in East region and in particular in the countryside of this region. More than 90 percent of these women are illiterate and mostly working as unpaid family worker in the agriculture sector.

When the socioeconomic living conditions are considered, living standards of the Kurdish speaking women, who don't know Turkish, are worse off in comparison to their Turkish speaking counterparts. Authors state that *"So being able to speak Turkish is really seem to matter socio-economically and hence can be considered as "linguistic capital[8]".* Lack of the linguistic capital amounts to an important barrier and prevents these women to access available resources and positions in the society.

In the same study Smits and Hoşgör, (2003) reports that the Kurdish speaking women, who don't know Turkish, also tend to marry and have children earlier than their Turkish speaking counterparts. Their marriages more often take places in traditional manners; like, marrying with only a religious marriage ceremony; a family relationship with the husband (consanguineous marriage); a bride-price payment, arranged marriage etc. They much more often embrace the social norms regarding traditional gender roles than the Turkish speaking and the Kurdish speaking women, who know Turkish. For example, a substantially larger proportion of these women consider that "important decisions should be made by men"; "men are wiser than women"; "women should not argue with men"; and "better for male than female child to have education". Compounded with lower education, a traditional family back ground and poverty, the Kurdish speaking women are seem to be more often transmits these traditional values to the next generations (Hoşgör and Smits, 2007).

[8] Smits and Hosgör, (2003), used Bourdieu's concept of 'linguistic capital' that refers to the ability to speak a countries dominant language properly constituting a potent social resource. The linguistic capital so a basic source can be transferred into other forms of capital like economic or social capital on the path to social success.

VI.4. SOCIOPOLITICAL SITUATION OF THE LANGUAGE MINORITIES

A process of transition from an empire to a nation state characterized the early years of the Republic of Turkey. Similar to other nation states, Turkey aimed to build and strengthen a Turkish national identity and modernize the country. This project was initiated and supported by the state intellectuals and elites. Turkey's official ideology thereby brought about a practice of homogenization of language and promotion of a particular model of Westernization and secularization (Aydıngün and Aydıngün, 2004).

Treaty of Lausanne (24 July 1923), securing the international recognition of the new state, was recognized the existence of minority groups in Turkey only on religious grounds but and not on ethnic or linguistic basis (Grigoriadis, 2007). For this reason, minority rights were only granted to the Republic's non-Muslim citizens. Muslim Turks constituted the majority of the population and the treaty did not grant any special status or provisions to other non-Turkish Muslim ethnicities. Kurds and Arabs were the most populous ones of these groups, yet there were also other ethnicities: Lazes, Muslim Georgians, Greek-speaking Muslims, Albanians, Macedonian Muslims, Pomaks, Serb Muslims, Bosnians, Tartars, Circassians, Abkhazes, and Daghestanis (Ergil, 2000; Çağaptay, 2004).

During the Ottoman era, predominant collective identity of Muslim ethnicities was the Islam religion. Founders of the new state considered Islam a possible obstacle against adaptation of Western political and economic standards. Islam it might also cause to restoration of old the system (Saatci, 2002). The target of the state elites was to achieve prompt and reliable domestic stability for the sake of security of the new state and its regime. Thus, they preferred to build a new secular collective identity with a policy of uniformity and standardization of all elements in the society (Ergil, 2000).

Along with adaptation of secularism principle, the new regime pushed religion to the margins of administrative structure and societal life. It aimed to create a new and alternative collective national identity, wherein not Islam but Turkish ethnicity, comprised the majority of the population, was mentioned as a constituent element (Yıldız, 2001). New identity could have been based on a more civic constitutional citizenship and national unity could have been developed out of diversity as reconciling differences. In fact, Turkish citizenship in the first constitution was explicitly based on a political-territorial definition of Turkisness instead of an ethnic one. However, there have been disagreements between the theory and its practice. The practice has oscillated between a political and ethnic idea of citizenship due to ambiguity of other enacted laws (Yeğen, 2004).

In this way, during the early years of the Republic, Turkish language came to the fore as one of the potent ingredients in describing the boundaries of the public sphere (Çolak, 2004). Nationalization and secularization strategy firstly began with successive reform implementations on language that changed the Ottoman Turkish radically. The parliament passed a law on the script change; Arabic to Latin, on 1 November 1928. 'The Turkish Historical Society' and 'The Turkish Language Association' institutions were established at the beginning of 1930s. These institutions were aiming to study history and language on nationalistic grounds and provide guideless for official history and language policies. A purification policy implemented throughout 1930s and 1940s to eliminate Arabic and Persian words since they assumed to remind religious and conservative meanings and understandings. As several words purged over time, they were replaced with pure Turkish ones. Beginning from the end of 1920s, ''Citizen, speak Turkish!'' campaigns launched that directed to the non-Muslims and non-Turkish Muslims to make them learn and speak the new Turkish.

A series of additional measures were aimed to further advance national homogenization. For instance, all public manifestations of separate ethnic identities; schools, associations, publications, religious fraternities and teaching foundations were banned. Ethnic groups were prohibited from teaching, writing, or publishing in their own language. 'The Law of Resettlement' was passed in 1934, aiming to

reorganize demographic distribution of ethnic groups and to accelerate assimilation of non-Turkish Muslim elements (Saatci, 2002, Yeğen, 2004).

On the other hand, the policies of Turkification were grounded on inclusive basis; being a member of other than Turkish ethnicity was not an obstacle to be the new 'Turk' (Çolak, 2004). Voluntary selection of Turkish language in daily use and socialization into new 'secular' Turkish culture were the avenues of assimilation that kept open to non-Turkish Muslim minorities (Grigoriadis, 2007). In other words, the primary bases of the new monistic national Turkish identity were 'acquiring ethnicity through-language' for the ethnic minorities and embracing secular life style and manners for the Turkish ethnic group.

Apart from the Kurdish and Arabic minorities, the majority of the other non-Turkish Muslim ethnicities had been deported or migrated to Turkey from the Balkan countries and Russia during the second half of the 19th and early 20th centuries. Because they had been compelled to leave their native land behind and were seeking a new homeland, they acknowledged the official identity at first.

Kurdish tribes, on the other hand, had used to live in certain autonomy for several centuries during the Ottoman era. There were frequent riots and uprisings during 1920s and 1930s in the East region; not only against nationalization but also against secularization policies (Saatci, 2002). However, they did not gain popular support and long lasted. In fact, most of the traditional local elites –tribe leaders and big landowners etc.- had their members in national parliament (Bruinessen, 1992).

The policies aiming to form a homogenous national community implemented intensively until the end of II World War. Ahmad (2003) wrote about the outcome of these policies that "*By the late 1930s, the nationalists had partially succeeded in creating a new identity for most of the population of Anatolia, with only the Kurdish population in the east and the Alevis of central Anatolia remaining disaffected, the former on ethnic linguistic grounds and the latter on religious grounds*".

Beginning from 1946, Turkey adopted multi-party system. Single party government lost 1950 public elections and the first time an opposition party, Democrat Party, was formed government. For a decade, the new era brought a

certain degree of liberalization and relaxation from the homogenization policies. The Kurdish economic and political elite were further incorporated into the sociopolitical system in this era and ethnic demands lost momentum (Saatci, 2002).

On 27 May 1960, Turkish Armed Forces overthrew the government and took over administration. Coup administration tended to revive assimilation policies of the pre-1950 period for a while, yet this did not go too long. The new constitution, which promulgated by the coup administration in 1961, was in fact granting wider civil liberties than hitherto existed in Turkey. By virtue of the new constitution, mainly leftist oriented Kurdish intellectuals began to demand greater cultural freedom, and question the state policy of assimilation. Meanwhile, internal migration from eastern to western regions made regional economic, social and cultural differences more visible in the eyes of the common Kurdish population (Bruinessen, 1992; Ahmad, 2003). Nevertheless, relative to other political issues the ethno-political demands and conflicts were not dominating issue of national political arena of the 1960s.

In Turkey democratic system interrupted by the second and third military coupes, on 12 Mach 1971 and 12 September 1980. Meanwhile, since the beginning of 1970s, parallel to the upswing in ethnic nationalism worldwide, there had been solidification of a Kurdish ethno-nationalism in Turkey (İçduygu et. al, 1999; Sirkeci, 2000).

Considering its effects on society and politics, the 1980's coup was the severest one. Military regime aimed to de-politize society by implementing highly severe measures; martial law implemented throughout the country, constitution was suspended, parliament was dissolved, parties, professional associations, trade unions were either closed down or suspended their performance, politically active people were detained etc. (Ahmad, 2003).

Military regime, governing the state at first hand between the 1980 and 1983, more severely enforced these suppressive measures in the East region (Cemal, 2003). In 19 October 1983, a law was passed to forbid the use of any language other than Turkish and this turned out to be a ban on Kurdish language usage in public. The primary intention was to suppress secessionist political groups (Grigoriadis, 2007).

On 7 November 1982 a new constitution, notably narrowed civil liberties, proposed by the military regime and it was overwhelmingly approved by public voting. Seeing that the new constitution was 'accepted' by the public, National Security Council agreed to lift the ban on politics and enabled formation of new political parties under strict regulations. Coup generals also had a 'state party' formed, Nationalist Democracy Party (NDP), hoping that they would remain still effective during civilian rule. In the first general elections, 6 November 1983, despite the coup general's open support, NDP lost elections and a newly established Motherland Party gained great majority of the votes.

The end of military administration and result of elections pawed way a gradual development of a new democratic political climate. However, in 1984 an illegal party, the Kurdish Workers' Party (Partiya Karkaren Kurdistan – PKK) began to launch violent guerrilla warfare and terrorist attacks in south-eastern Turkey. Various measures taken in the fight against PKK terrorism again narrowed area of civil liberties. In 1985, the government decided to arm Kurdish villagers in order to create a local anti-PKK force (İçduygu et. al., 1999); 2 years later the state of emergency declared in the 10 provinces of the East region. These provinces were governed with special governors with extraordinary powers. Another instruments in this vein was the 'Anti-Terror Law of 1991', which imposed restrictions on freedom of expression (Aydın and Keyman, 2004).

The armed conflict between the PKK and Turkish military/security forces continued ever increasingly until the early 1999. The conflict was a drain on national economy but it especially inhibited economic investments provision of education and health services in the East region. In the year of 1998; human causalities were reported to be; 4 049 civilians, 5 121 security personnel and 17 248 members of the terrorist organization (Saatci, 2002).

Another important social consequence of the conflict was the displacement of the Kurdish population for the security reasons, resulting in mass migration movements over the last 2 decades. In 2006, Hacettepe University Population Studies carried on a survey on the 'migration and displaced population' intending to collect information about the origin of the displaced persons, their destinations and their

social and economic characteristics before and after the displacement (Hacettepe Üniversitesi, 2006).

The survey covered 14 origin and 10 destination provinces with their urban and rural areas. From 1986 to 2005, the total number of people who experienced dislocation was estimated in the range of 953.680 and 1.201.200[9]. Of these displaced persons, the great majority was living in the rural areas of the 14 provinces; their number estimated within the range of 728.000-946.400. The migration took place mainly during the period of 1986 to 1995: namely, as 32 percent in 1986-1990, 61 percent in 1991-1995 and 7 percent took place in 1996 to 2005 period. Indeed, the first half of the 1990s was the most intensive years of the armed conflicts in the East region (Ahmad, 2003). Aydın and Keyman (2004) wrote for these years that "*the Turkish political landscape was based upon a clash between the discourse of progress, secularism and reason and the discourse of tradition and anti-secularism, as well as nationalism and the emergence of the ethnic assertions by the Kurdish population, whose activities ranged from the politics of identity/difference to PKK terrorism*".

Administrative elites of Turkey too began to accept presence of a 'Kurdish Question' in the country to a greater extent in the 1990s. Two presidents of Turkey, Özal and Demirel, have recognized in their speeches reality of the Kurdish ethnicity in this era (Sirkeci, 2000). The ban introduced by military regime on the usage of Kurdish language was abolished in 12 April 1991 (Wiessner, 2002). An alternative civil political discourse was formed by the efforts of both the Turkish and Kurdish intellectuals: writers, journalists, lawyers, and politicians etc. who urged for a steady reconciliation (Bruinessen, 1992; Cemal, 2003). In fact, the military conflict has never been turned out an ethnic clash between the Turks and Kurds and it has largely confined to the East region.

Considering the consequences, 1999 marked the sociopolitical history of Turkey with two important developments. The first one was the capture and arrest of

[9] As the total number of the Kurdish ethnic people, the extent of displacement has been politicized and remained a controversial issue until this survey. Official sources declared the number of displaced persons as 370 000, whereas 'estimate' of several national/international non-governmental organizations was ranging between 1 and 4 millions (Hacettepe Üniversitesi, 2006).

the PKK leader in Nariobi, marginalized the armed conflict. The second one was the admission of Turkey by the European Union to candidacy for full membership (Şimşek, 2004).

These developments were triggered a change in the official view on the Kurdish question. Beginning with the constitutional amendments of October 2001, subsequent reforms has removed the restrictions on the use of language; broadcasting by public and private media in Kurdish was permitted in August 2002[10]. In the same year, state of emergency administration was lifted from all of the 10 provinces and teaching of the Kurdish language in private courses was permitted. Pro-Kurdish Democratic People's Party (DEHAP) was allowed to join 2002 general elections; it received nearly half of the votes in 5 out of 81 provinces and at national level only 5 percent of the total votes. In order to foster social peace, parliament declared a partial amnesty and reduction in sentences for persons who involved illegal activities in 2003. Meanwhile, government also introduced a 'Return to Village and Rehabilitation Project' so as to compensate looses of displaced people. 400 villages and hamlets have been reopened between 2000 and 2004 and gradually displaced people were authorized to return their villages with material assistance provided by the state (Aydın and Keyman, 2004). These may not have totally resolved the 'Kurdish question' issue. However, by internal and external developments, Turkey began to accommodate itself to the existence of multiple ethnic identities as still maintaining its unitary structure. In this way, the Kurdish language has much less politicized than before (Çolak, 2004).

[10] The first Kurdish-language film with Turkish subtitles broadcasted by a local television channel in Diyarbakır in May 2004. In June 2004, the Turkish Radio Television (TRT) launched its own programs in minority languages: in Bosnian, Arabic, Kırmanci Kurdish, Circassian, and Zaza Kurdish (Grigoriadis, 2007).

VI.5. FERTILITY DIFFERENCES BY MAIN LANGUAGE GROUPS

Demographic sample surveys, fielded every five years since 1963, have shown that in Turkey fertility has not declined uniformly over the country. In fact, different sections of the population have been affected by social and cultural changes in different ways and varying paces. Regional differences in economic, social and demographic transitions have always been a central theme in demographic and other social-science literature.

According to the TDHS-2003, the greatest contrast in fertility level is between the East region and the rest of the country. TFR is 3.65 in this region, meaning that women in this region have about 1.5 more children than elsewhere in the country (Hacettepe University et al. 2004).

The first detailed analysis on the mother tongue group's differential fertility level and pattern carried out by Dündar (1998) from the TDHS-1993 data. Using P/F ratio technique, she estimated cumulative cohort (P) and period (F) fertility rates by the main language groups. The main findings of can be summarized in the following:

1. Regardless of the mother tongue group, all women in Turkey tend to have a similar fertility level in the first five years of their marriages. However, immediately after the first five years, the fertility patterns of the mother tongue of women show difference. As the fertility rates of the Turkish speaking women decrease after this period, a similar decline is visible for the Kurdish speaking women only after the 5-9 years of marriage.
2. The completed fertility rates of the women, married 20-24 years, show great deal of variance by the mother tongue. Turkish speaking women have 4.1 children at the end of reproductive period while the Kurdish speaking counterparts have 7.2 children.
3. Comparison of the cohort and period fertility rates, on the other hand, implies a significant fertility decline for the two mother tongue groups. The

cumulated period fertility rates for the most recent period for the Turkish speaking women is 2.7 children and for the Kurdish speaking women 5.3 children.

Dündar (1998) additionally has estimated P/F ratios for the East region so as to understand whether the differences she found at national level can also be attributable to this specific region. The results have shown that the fertility of the women from both two groups living in the East region is higher that than that of Turkey's average. However, the pattern of distinctive fertility between the Turkish and Kurdish speaking women is highly similar in this region too. The only difference is that there has been a more notable fertility decline for the Turkish speaking women in this region.

In order to control for socioeconomic characteristics, Dündar (1998) estimated P/F ratios for 'illiterate' women of the two language groups. Both cumulated cohort and period fertility rates of the illiterate Kurdish speaking women was higher than their Turkish counterparts and declining with slower pace. Dündar (1998) wrote, "*The illiteracy distinction has not caused much change in the fertility rates of Kurdish language women as the literate percentage of this group is very low*".

Koç and Hancıoğlu (1999), Koç et al. (2000 and 2008) have also studied the differential fertility level and age pattern between the Turkish and Kurdish speaking women, using TDHS-1998 data. Table 4 shows, Age Specific Fertility Rates (ASFR) and Total Fertility Rates (TFR) for the 1995 -1998 period. The TFR of Kurdish speaking women is 1.9 times higher than that of Turkish speaking women in Turkey. This difference declines to 1.7 times in the East region. An important difference is that ASFR's of the Turkish speaking group decrease swiftly after 20-24 age group, whereas for the Kurdish speaking women a gradual decrease is visible only after age 25-29.

Table VI.5.1. Age Specific Fertility Rates[1] (ASFR; per thousand) from TDHS-1998 and Total Fertility (TFR) from TDHS-1993, 1998 and 2003 by Main language groups in Turkey

	Turkey			East Region	
Age Group	**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 (1993)	**2.25**	**4.57**	**2.74**	**2.84**	**5.27**
TFR (1998)	**2.29**	**4.27**	**2.61**	**2.93**	**4.84**
TFR (2003)	**1.88**	**4.07**	**2.23**	**2.28**	**4.72**

[1] Rates are calculated for the 1-36 months preceding the survey date.
Source: Koç and others (2000 and 2008)

According to these authors; the Turkish and Kurdish speaking women are "*actors in different demographic regimes, at different stages of the demographic and health transition*" (Koç and Hancıoglu 1999, Koç et al. 2000). They highlighted two proximate determinants of fertility; nuptiality and contraceptive use patterns, as the driving factors of the different demographic regimes. The median ages at transition to first marriage show that the Kurdish speaking women marry earlier than their Turkish speaking counterparts. The median age was estimated 19.2 for the Turkish speaking population and 17.2 for the Kurdish speaking population from the TDHS-98 data. Another finding about marriage is that a great majority of women from both groups prefer endogamy within their own language groups; more than 90 percent of women married with men from their own mother tongue group. The study also shows that there had not been significant changes in this marriage pattern over different cohorts.

As for the contraceptive use: the Turkish speaking women were more likely to use contraception than their Kurdish counterparts: 69 percent and 39 percent respectively. The Kurdish speaking women were less likely to use contraception though when they use they were more incline to employ modern methods.

The demographic studies in Turkey, as summarized in this section, have been paid attention to differential fertility level and pattern of the mother tongue groups since the beginning of the 1990s. These studies in general have used aggregated level fertility measures and differences in fertility developments have been studied mostly in a descriptive manner.

VII. MAIN RESEARCH QUESTIONS OF THE STUDY

VII.1. RESEARCH QUESTIONS ON THE FERTILITY DECLINE PROCESS FROM THE 1980s ONWARDS IN TURKEY

Economic approaches to fertility transition mainly argue that economic development and accompanying social change erode the rationale behind high fertility and thereby brings about general fertility decline. Considering the history of Turkey's national fertility decrease this argument seems to be quite relevant. As Keyder (1997) said "*There has been in Turkey, as in the majority of peripheral economies until the 1980s, considerable development, national economic integration, urbanization, and increase in levels of welfare".* Meanwhile, until the 1980s, also the fertility transition had gained momentum in the country. Though with different paces, the fertility of different segments of the society was in a clear decline at the beginning of 1980s.

Turkey's modernization, socioeconomic development and accompanying social change, came into a new phase with the 1980s. Previously initiated processes maintained their preeminence; transition from agricultural to industry and service sector, commercialization in rural areas, urbanization, decreasing labor force participation of females, increasing level of education among both male and female population, etc. Some new developments, conducive to further fertility decline, have characterized this era as well. These are fast but volatile economic growth, transition from state-led economic development to private sector initiatives, economic globalization with its new social and cultural dimensions.

An important outcome of these developments is related to the direct expenses of maintaining children, which have increased over time. Costs of education and health are critical. According to Boratav et. al. (2000), since the early 1980s, an elite system of higher education, based on private high schools and universities has been emerging in Turkey. Concurrently, at state high schools and universities fees have been raised whereas credits extended to students are based on commercial interest

rates. The private schools are generally preferred by middle or upper class families (Simits and Hoşgör, 2006). Similarly, the 1990s witnessed an increasing and striking polarization in terms of the quality and quantity of health services extended to different segments of the population. From the mid 1990s onwards incentives extended to private investors in education and health has increased the private sector's share in education and health investments. Public hospitals too have progressively commercialized their services. In this manner, for Boratav et. al. (2000), market-based provision of education and health has generated a dual system in human capital formation and this contributes to a polarization between children and families of the upper and lower classes.

Fertility has maintained its decline throughout the 1980s and 1990s. At the beginning of the 2000s, total fertility at the national level came down to reproduction level. There are good reasons to believe that the various macro socioeconomic changes and accompanying social consequences of the last decades have exerted an impact on fertility behavior in Turkey. Therefore, the primary macro indicator with which we can trace the changes in fertility of the different socioeconomic segments of society is 'calendar' time. Understanding the last 25 years of fertility trend would be very helpful to also predict the future developments.

The first objective of this thesis, as related to this section, is to examine how the trends of first, second, third and fourth birth transitions have changed over time in Turkey. In general, we expect to find a continual decline in the transitions to the third and fourth parities since the beginning of the study period. In addition, we want to see how the fast but volatile economic and social developments since the beginning of 1990s may have influenced first and second birth developments. A notable decline at first and/or second births indicates a postponement in childbearing, which may indicate that period total fertility could also drop below the reproduction level in the near future.

Secondly, in order to deepen our understanding of fertility developments, we should identify how the decline trend has been picked up by different socioeconomic groups in Turkey. The quinquennial total period fertility estimates indicate persistent fertility decline for all socioeconomic groups. However, the course of parity

transitions by these groups has not been documented. We intend to find out whether the fertility decline of the different socioeconomic groups has followed similar or different pathways in the last decades. A general distinction in calendar time, for example as before and after 1989, could be useful to illustrate how these groups's fertility behavior was influenced by the changing economic and social settings in the country.

In Turkey, educational and employment characteristics of individuals are closely associated with their life chances and attaining high socioeconomic living conditions. Especially in the case of women, labor force participation and gainful employment are intimately bounded with their education level.

Women with higher education have more chances to participate and remain in working life. Therefore, we assume that fertility developments of highly educated women can represent the behavior of higher income level groups in general. As we mentioned in the previous literature part, parents with higher income have more demand for higher 'quality' children. We note that the direct expenses for quality – like education and health expenses - have increased over time in Turkey. Opportunity costs of foregone earnings of women of this group while taking care of a child can be high as well and this can inhibit fertility further. Why we can expect from these couples to limit their fertility in the first place is that these parents embraced the two-child norm already at the beginning of 1980s.

There are two likely fertility developments for couples with higher income and educational level; we expect firstly, a persistent decrease in the transition rates of third and fourth births. Secondly, the fertility decline of the highly educated women have been driven by postponements of first and second births since the beginning of 1990s, due to volatility in the economy and the increasingly market oriented provision of services.

We assume that middle income families in Turkey could be represented by women with 'primary level' educational attainment. In general, these families would have followed the path of the former group. Some urbanities in this group may have participated for the labor market via informal working options. The pressure felt by

middle income families to maintain their life standards during the 1990s might even have been greater than for the higher income groups. Thus, embracing a low fertility behavior (postponement of first and second birth) might have become more dominant for this group throughout the 1990s.

The low income families are resented by women with 'less than primary level education' in this study. The majority of women are working, usually at family owned agricultural lands in rural areas. Due to their low education they are only loosely attached to the formal labor market when in urban areas. We expect to find the slowest fertility change for this group, relying upon the literature we presented before. For example, according to economic approaches to fertility, for low income parents' children can provide additional utilities as they enter the labor force and contribute to family income. Likewise, in these families, children, particularly sons, are seen as a potent source of old age security. If the monetary and psychological costs pertaining to have children do not exceed the expected utilities, fertility of these groups may not fall noticeably.

Based on these arguments, one can expect two alternative pathways for low income groups in Turkey. First, we may expect a limited extent of fertility decline for low income parents in Turkey. Accordingly, in our empirical research we may expect to find little evidence of transitions at the lower parity orders (1^{st} and 2^{nd}) until the beginning of the 2000s, and for transitions but for higher orders (3^{rd} and 4rth births) we expect to find a gradual decline since the beginning of our study period.

However, the pathways of low income families might not have been too different from those of the middle and higher income groups. We should consider the fact that the societal impact of changing economic circumstances and globalization since the early 1980s has gone beyond changes in the income distribution. At first, low income families have suffered hardening economic conditions. As a result the expenses of having additional children would have exceeded the utilities expected from these children. In other words, changing economic conditions may have decreased the demand for (additional) children in these families. The economic approach argues that under the condition of high supply of children and easy access to contraceptive methods, a decreasing demand may result in a fast fertility decline.

Additionally, during the course of development, the Turkish upper classes have increasingly demonstrated life styles that resemble those of their counterparts in Western societies. For example, imported cars, works of art, prestigious consumption goods became status symbols to the new urban rich. This facilitated the spread of Western consumption norms and cultural influences to the middle and lower income classes in society. Advertising in media makes consumer goods visible in the homes of the less affluent too. In this manner, Turkey became a typical consumer society in the 1990s (Ahmad, 2003).

'The Turkish Value of Children Survey', carried out in 1975 and 2002, studied changing family roles and dynamics in rural and urban areas of Turkey. Ataca et. al. (2005) comparing results of the two surveys has provided important insights about various aspects of family dynamics of the three different socioeconomic groups ('low', 'middle' and 'high'). Comparisons of values of children across different social strata (and generations) reveal that due to social changes, expectations from (adult) children are in a decrease, whereas qualities desired in children are in increase in all socioeconomic groups in Turkey.

In this manner, although a large degree of heterogeneity characterizes contemporary Turkey, there has been a convergence in the direction of social change too. Ataca's study (2005) additionally presents that whereas psychological values attributed to children have increased, the utilitarian/economic values have decreased in all socioeconomic groups, though with different extents. Similarly, son preference seems to have been replaced by daughter preference, pointing to changing family roles in this dimension too.

To some extent the economic transformation of the last two decades seems to have had rather similar social consequences across different segments of society. While a polarized economic structure has been sustained between 'poor' and 'rich' segments, a convergence might have occurred in 'tastes' about consumption. Consequently, it may be that the fertility development of the low income groups may not differ from the middle/high income groups and that low income parents may have followed in the footsteps of changing behavior of the 'trendsetters'. In sum, the pattern of fertility decline might be the same across groups and different income

groups may only be at different stages of the same development. If this is the case, we expect to observe a substantial decline in transition to third and fourth births and a gradual postponement of the first and second births for all socioeconomic categories of parent.

Together with socioeconomic characteristics of women, we also consider the education level and economic activities of male spouses. The low level of education of women makes them economically dependent on their male family members. Indeed, for women not gainfully employed, upward social mobility might depend more upon their marriage with a promising husband (Smits and Hoşgör, 2006). As we have shown, at all educational levels, men are more actively participating to working life than women. As more education brings more income education level of a husband is a good proxy of the socioeconomic level of families and we need to use it as a control variable in our models. Inclusion of both women's and their husband's education and labor force participation allow for better tracing fertility developments of different socioeconomic segments.

VII.2. IMPACT OF STRUCTURAL FACTORS ON THE DIFFERENTIAL FERTILITY PATTERNS OF THE MAIN LANGUAGE GROUPS

The '*structural approach*' or '*characteristics hypothesis*' attributes fertility differences between majority and minority group members to an important degree their differential socioeconomic and residential characteristics. Fertility differentials are assumed to disappear over time as minority groups obtain access to and integrated into the socioeconomic structures of the society at large. In other words, for the minority group members; the greater the structural integration with the majority, the closer should be their fertility to that of the majority group members.

In the line of structural/characteristics approach, we argue that the reason why the Kurdish speaking women have higher fertility compared to the Turkish speaking women is related to their disadvantaged socioeconomic circumstances.

Therefore, we expect that the substantial part of birth intensity discrepancies at all birth orders should disappear when we controlled for individual level socioeconomic characteristics of women.

In fact, along with the individual level characteristics, if we were able to include the contextual impact of community factors and the different opportunities that the area of residence offers into the analysis, we might have got a better understanding about the fertility developments. The extensive and long lasting regional disparities in Turkey actually gives an impression that this kind of multilevel approach, allowing the simultaneous inclusion of both the micro (individual level) and macro (contextual level) components, is highly suitable to examine the structural/ characteristics approach. Nevertheless, we can not perform such kind of analysis in this study, due to the lack of necessary information; such as, on internal migration histories of women.

In this study, we will use two interrelated set of covariates. The first set includes covariates regarding childhood era of the women; *childhood place of residence, respondent's mother's literacy and number of siblings*. The second set refers to later stages of life course; *education of women, working status before marriage and husband's education*. As we have seen in the previous section, the distribution of these attributes show variance over the calendar period and between the mother tongue groups.

We intend to investigate at first, period trends in the first and higher birth orders and the extent of transition rate differences between the two main mother tongue groups. In the second step, we will control for the effect of compositional changes among the women over some demographic characteristics; as age at marriage (or previous birth), sex of previous children and survival status of previous children. In the third and fourth steps of modeling we will add the socioeconomic covariates that provide information on how women's socioeconomic characteristics affect their propensity of giving birth. The addition of these set of variables expected to be result in modifications in the effect of the calendar period and mother tongue factors. The modified outcome should then be interpreted as an effect of the

additional control of the changes in the socioeconomic compositional characteristics, from one period to another and over different segments of the female population.

Some of the previous studies have shown at progression to first birth that Parity Progression Ratios (PPR) estimates do not show significant variance by the women's individual level characteristics (Hersek, 1995). Also, as reported by Dündar (1998), the Turkish and Kurdish women's cohort and period fertility rates are not quite different in the first five years of marriages. Therefore, the effect of socioeconomic characteristics at transition to first birth order may not be so significant. We assume that these attributes more useful to explain period changes over time and differences by the mother tongue of women at the transition to second and higher birth orders.

VII.3. IMPACT OF SOCIO-CULTURAL FACTORS ON THE DIFFERENTIAL FERTILITY PATTERNS OF THE MAIN LANGUAGE GROUPS

The structural approach may not alone satisfyingly explain differential fertility behavior among mother tongue groups. A second alternative (or supplementary) perspective, 'cultural approach', points out the effect of distinctive cultural norms and values pertaining to family and reproduction. This approach posits that sub-culture of mother tongue groups may lead to differential behavior even these groups may experience similar level socioeconomic living conditions.

In Turkey, this hypothesis could be valid because of the fact that the Turkish and Kurdish speaking women have some distinctive social and cultural attributes influencing women's status in family and society. These distinctive characteristics may, great extent, arise from differential socioeconomic settings of the mother tongue groups experience. Thereby, in an individual fertility analysis, when the socioeconomic characteristics are kept under control, the effect of these distinctive cultural attributes could remain trivial. Nevertheless, mother tongue groups may have historically rooted particular cultural characteristics that their effect may not

disappear totally with socioeconomic development or statistical standardization. In other words, 'modernization' may not bring about a total convergence of diverse cultural patterns towards one pattern. Eventually, different cultural attributes might still be influential enough to lead a differential fertility behavior.

We intend to scrutinize effect of cultural factors, particularly those in relation to status of women, on the mother tongue groups' fertility behavior. Cultural variables are actually difficult to measure with comparable indicators. In this study, we assume that some basic marriage characteristics of women could be a relevant proxy to utilize cultural dimension in the empirical analysis. The more traditionalistic marriage formations, in which women's status is relatively lower than in 'egalitarian' settings can be delaminated with certain characteristics in Turkey; such as, arranged marriage, bride's money payment, consanguinity with husband, patrilocal residence at the beginning of marital life (Ergöçmen, 1997). We will use this set of covariates in the last model of our analysis.

Firstly, we presume that high prevalence of the more conservative and customary cultural attributes among the Kurdish speaking women could partially account for their higher parity transition rates than that of the Turkish speaking women. We expect to observe significant influence of these cultural factors especially at transitions to second, and progressively more, at transition to higher order parities.

Secondly, examination of both socioeconomic and cultural characteristics make us to believe that there could be significant fertility behavior differences among the Kurdish speaking women according to their ability to speak Turkish as a second language. We assume to find the highest transition rates at each parity transition for this group of women. When we controlled for socioeconomic and cultural characteristics, the differences from the other groups, especially from those counterparts who know Turkish, should then be minimized.

VII.4. IMPACT OF MINORITY GROUP STATUS ON THE DIFFERENTIAL FERTILITY PATTERNS OF THE MAIN LANGUAGE GROUPS

According to İçduygu et. al, (1999) the Kurdish speaking population in Turkey has been experienced for decades of an intense *environment of insecurity*. As suggested by the authors, the environment of insecurity is a heuristic and illuminative model, rather than being a fully explanatory concept. It is composed by two interrelated situations; namely, '*material insecurity'* and '*non-material insecurity*'. Material insecurity dimension can be measured by the relative amount and secure access to; income, possessions, education, health, state services and life itself. The non-material security is related to feelings of security about language, culture (identity) and belonging (the opposite of alienation).

The sociopolitical developments in the last decades; particularly the ban on the Kurdish language, armed conflict and displacement of population, have been negatively affected life circumstances of the Kurdish speaking population in Turkey. These developments should have been notably augmented environment of insecurity experienced by the Kurdish speaking population.

According to the 'Migration and Displaced Population' survey findings (Hacettepe Universitesi, 2006), almost 90 percent of the displaced population declared that during displacement they had to migrate without their consent. More than 95 percent had to leave their houses, agricultural fields and gardens, agricultural machineries and 83 percent had to leave their flock (cattle, sheep and goat) behind. Conversely, only a quarter of the displaced persons were able to own a house at the destination areas. That is to say, the majority of the displaced population has lost their possessions and they were compelled to begin a new life in an alien environment.

The displacement was also driven people to unemployment. Lack of education and proficiency in Turkish were the factors severely limiting

socioeconomic opportunities and chance of network building in the destination areas. Lack of fluency in Turkish also caused difficulties whenever it was necessary to deal with the state bureaucracy (courts, schools, municipal issues, etc.). 40 percent of the displaced population has maintained their livelihood as going into dept, whereas only 13 percent could obtain material/financial support from the official authorities. Culmination of these experiences have heightened and politicized an ethnic identity formation among some segments of the Kurdish speaking population (İçduygu et. al., 1999).

In this study, in addition to socioeconomic and cultural influences, we intend to investigate the possible effect of minority group status[1] on fertility differences among the main mother tongue groups. Minority group status hypothesis asserts that membership of a particular minority population may have an independent effect on fertility behavior of individuals. This particular form of status does not affect all of the group members identically. The nature and extent of influence is not only related to economic standing but also it would differ depending on the interaction of several other factors: desire for social and economic mobility; acculturation of dominant culture and norms; social and psychological insecurity feelings associated with ways of status attainment; pronatalist or antinatalist ideological concessions of the group etc.

Socioeconomic deprivation of the minority group members can be compounded by the other disadvantages they encounter in the society. Especially when they try upward social mobility they may have to deal with higher difficulties than the majority group members with similar socioeconomic status. Additionally if minority group members desire to preserve their distinctive characteristics then they would find themselves as further marginalized in the economic, social and political system. If fertility decline highly driven by actual or expected socioeconomic achievement in society, then the minority group members with low level socioeconomic status would have less chance follow up this trend. Therefore their

[1] Because we don't have any relevant variable measuring the material and non-material insecurity feelings it is not easy to examine hypothesis in the line of minority status approach. In our case especially, had we able to use migration histories of the women, we could have had a better approximation to test our arguments. A comparison of birth rates before and after displacement would be highly illuminating in this sense.

fertility level would remain higher than that of majority group members who have the similar low level socioeconomic status.

Following the above reasoning, we argue that even after controlling for individual level demographic, socioeconomic and cultural characteristics, the Kurdish speaking women's birth intensities would remain higher than their Turkish speaking counterparts. In other words, the environment of insecurity of the Kurdish speaking population could have formed an additional characteristic and this might have had a retarding effect on their fertility transition. For example, a comparison of birth risks between the Turkish and Kurdish speaking women with the same level of low educational attainment and/or traditional marriage formation may enable us to test this assumption.

For minority group members with higher socioeconomic standing, or for those who have greater aspirations for upward social mobility, the minority group status is hypothesized to work in a reverse direction. The feelings of marginality and insecurity would make them more sensitive to the obstacles placed in their paths to reach a full socioeconomic achievement. The more educated and prosperous minority group members then may lower their fertility even further than their majority group member equivalents so as to secure their socioeconomic positions.

Within the context of Turkey, educational attainment apart from being an indicator of socioeconomic status also refers to a particular cultural exposure and probable acculturation. Education is significant to the Kurdish speaking women at first place to learn Turkish and then adaptation of it in daily conversations, which is a typical urban phenomenon and mostly confined to middle-class (Weissner, 2002). Because it is related with rise in the socioeconomic hierarchy, it can be seen a factor decreasing environment of insecurity. Wiessner (2002) wrote that:

> *"To understand the accompanying neglect of Kurdish one must consider a number of less explicit motives: in parts of the Kurdish middle-class, modern Turkish culture-outwardly expressed through different clothing, behavior and conversation patterns- carries positive associations with a*

> *more fashionable and sophisticated Mediterranean lifestyle and a higher level of economic development. The decision to adopt Turkish thus appears to be closely related to a desire to imitate particular cultural models, together with a tendency to disregard Kurdish culture."*

In fact, due to the long lasting official discrimination against Kurdish language and, progressively more effective in the last decades, imitation of middle class behavior, the share of the Kurdish speaking population adopting Turkish language as first or second language has been increasing., Having examined 1993 TDHS data, İçduygu et. al., (1999) stated that:

> *If we take the proportion of households in which the interview is conducted in Kurdish, the size of the Kurdish population would be around 6 per cent, which is well below the assumed proportional ranges cited by many studies. This implies that Kurdish identity, which may be reflected by the spoken Kurdish language, has been abandoned voluntarily or involuntarily by many Kurds in Turkey*.

İçduygu et. al., (1999) expect for those who adopt Turkish language and identity, either ethnic or civil one, to pursue strategies promising to improve their life circumstance and mitigate their material insecurities. Similarly, in our study, we can expect to find significant fertility differences among the Kurdish speaking women with respect to their ability to speak Turkish language, even after controlling for all other individual level. This can be partly explained with the fact that with learning Turkish, socioeconomic and cultural characteristics of the Kurdish speaking women began to change. It can also partly be attributed to lessening influence of non-material insecurity factors in relation to acculturation of a new middle class identity and expectations about farther socioeconomic achievement. This kind of adaptation can bring about embracement of two child fertility norm. Therefore, we assume that the fertility behavior difference between the two groups of the Kurdish speaking

women could be more explicitly observed transitions at the higher order parities; namely at transition to third and fourth births. We can also argue that the transition rates of the Kurdish speaking women with secondary and more level educational attainment would possibly be at the same or even lower than their Turkish speaking counterparts.

VIII. METHODOLOGY

VIII. 1. METHOD OF ANALYSIS

Conventional summary measures of fertility are not sensitive enough indicators to depict changing childbearing behavior. For instance total fertility rate (TFR), the most commonly used one, has two major shortcomings. Firstly, TFR can be distorted by changes in the timing of childbearing: it might be depressed during years in which women delay childbearing or inflated in years when childbearing is accelerated (Bongaarts and Feeney, 1998). Therefore, depending upon the behavior; postponement or seeding up, TFR may give a distorted picture of fertility. Therefore level changes in period fertility do not necessarily reflect level changes in the completed fertility of cohorts. Secondly, fertility differences at different times in one population or among different populations are based on differential reproductive pattern at low or high order births. A comparison of TFR measures may not facilitate understanding different patterns of reproduction and related fertility differentials (Eltigani, 2001).

In order to provide better understanding of the fertility developments, a typical analysis should explicitly cover two important aspects. The first one is '*quantum*', referring to the proportion of women who make the transition from one parity to the next. The second one is '*tempo*', which relates to the time taken to move to the next higher parity by women who continue childbearing. The empirical analysis of this study aims to illustrate changing fertility developments in Turkey over time by the main mother tongue groups. Thus the study intends to cover these two aspects of fertility behavior.

An alternative approach to overcome shortcomings of the aggregate fertility measures is to examine fertility trends and differentials from a birth order perspective. This kind of analysis aims to depict actual childbearing patterns due to have more precise denominators. Thus analysis shows which couples choose or

choose not to bear additional children as each child is born (Bogue, 1993). The first attempt to derive parity progression ratios or distributions of birth intervals from birth history data could simply be to use cross-tabulations. However, this would lead to have biased results due to *censoring* and *selectivity* problems (Rodriguez and Hobcraft, 1980). In order to deal with censoring and selectivity problems, the birth orders have been analyzed with the life table technique for nearly two decades (see, for instance the seminal study of Rodriguez and Hobcraft, 1980). In recent years, Kaplan-Meier method, also called as the *product limit* estimator, has been more frequently employed to analyze progressions among birth orders instead of life tables (Baschieri and Hinde, 2007).

VIII.1.a. Censoring issues in birth order analysis

The censoring and selectivity issues arise from the nature of birth history data. A woman's childbearing span can be divided into three major components or intervals (Bogue, 1993; Hinde, 1998):

1. The time elapsed before the first live birth. Usually if childbearing out of wedlock is negligible in a population then the date of marriage can provide a good indication of the beginning of exposure. Under such circumstances, the length of time elapsing between marriage and first birth is called as the *first birth interval*.

2. 'Closed birth' intervals are the intervals between successive live births. For instance, the length of time elapsing between the first birth and second one is a closed birth interval and called as *second birth interval*. Immediately after the delivery of first child, the risk of another pregnancy is reduced by several biological and behavoiral factors; like, postpartum amenorrhea (absence of ovulation), duration of breast-feedings, postpartum abstinence, health problems of mother and infant, interference with sex exposure, contraception and subfecundity.

Therefore, beginning from the second birth interval, the time that elapses to have higher order births is higher than first birth interval. For this reason, first birth intervals are often analyzed separately from the rest.

3. The duration between the birth of the last child and the date of interview is called as 'Open birth' interval. In retrospective surveys, birth histories of women, who are too young to complete their reproductive life span, are artificially truncated by the interview date. In other words, these women's reproductive histories are *right censored* by the interview date.

In a birth order analysis, examination of only closed birth intervals may cause a sample selection bias. In such cases, short birth intervals might be over represented (Trussel, et. al, 1988). In order to fully understand the pattern of fertility developments an analysis should also include open birth intervals (Hinde, 1998). For these reasons, researchers mostly examine the birth orders with survival analysis methods. Survival analysis is a collection of statistical procedures for the analysis of data in which the outcome variable of interest is time until an event occurs. Survival analysis techniques provide estimates that based on exact length of time for each person who exposed to risk of event (Kleinbaum, 1996). Thereby, it enables to involve censored cases (open birth intervals) into the estimation as well. In our study, an event is defined as a transition to a next parity, that is to say birth of $(k+1)^{th}$ order child.

One of the objects of the survival analysis is to derive survival function (or survival distribution function), conventionally denoted with S. Survival function is defined as the probability of surviving to at least time t, $t > 0$, and is given by (Halli and Rao, 1992):

$$S(t) = Pr\,(T \geq t) \quad 0 < t < \infty$$

S(t) is a decreasing function with S(0) = 1 and S(∞) = 0. Using survival function, it is possible to estimate proportion of women at parity k who has not experienced $(k+1)^{th}$ order birth until a particular moment in time. If we subtract this proportion from 1, then we can get proportion of women who has experienced $(k+1)^{th}$ order birth until a particular moment in time.

Descriptive survival analysis techniques, like life table or Kaplan-Meier estimator, are nonparametric and univariate estimate of the survival functions. In our analysis they provide probability estimates of progression from parity *k* to parity *k*+1 and we will use them to describe general childbearing patterns in Turkey and by the main mother tongue groups.

Relative to life table, Kaplan-Meier technique has some advantages. In the life table method, episode durations are grouped according to arbitrarily defined fixed time intervals. Thus, relatively large number of episodes guarantees the reliability of estimates. Kaplan-Meier method, on the other hand, calculates a risk set at every point in time where at least one event occurred (Blossfeld et. al, 2007). By doing so, it more optimally to use information contained in a set of episodes. The only disadvantage is that all episodes must be sorted in relation to ending (and starting) times. Statistical programs for event-history modeling enable to overcome this drawback as providing efficient sorting algorithms.

The Kaplan-Meier survival estimator is used in the following formulation in this study. We want to estimate a Kaplan-Meier survival function for the analysis of the transition to birth order k+1. In this situation, the origin state will be the birth order k (or marriage, if k is first birth order).

For a data set with observed k+1 birth times $t_1 < t_2 < t_3 < \ldots < t_k$, where *k* is the number of distinct birth times observed in the data, the Kaplan-Meier estimator of the survivorship function at time t can be obtained from the following equation:

$$\hat{S}(t) = \prod_{j:t_j \leq t} \left(\frac{n_j - d_j}{n_j} \right)$$

With the convention that $\hat{S}(t) = 1$ if $t < t_{(1)}$

Where n_j is the number of women at risk of $k+1^{th}$ birth at time t_j and d_j is the number of $k+1^{th}$ births at time t_j. Kaplan-Meier survival function is a step function with steps is the points in time, t_j.

VIII.1.b. Descriptive indicators for quantum and tempo of fertility developments

Kaplan-Meier survival functions by different birth orders can be seen as estimate of birth functions (B_x), and these can be used to investigate *quantum* and *tempo* dimensions of fertility. Regarding the quantum dimension, birth function provides estimate of a cumulative proportion of women having a subsequent birth among those who exposed an x months duration since the previous birth. This measure, if based on a reasonably long duration, could be seen as an analogy to the parity progression ratios too (Ahn, 1994):

$$PPR_j = 1 - \hat{S}_j(t)$$

where *j* stands for respective parity order.

Empirical investigations on several developing countries have demonstrated that the cumulative proportions having a subsequent birth in 4, 5 or 6 years later from a given birth order could be suitable measures (Ying, 2002). In this study, we regard parity progression ratios at 5 years duration (60 months), $B_{60,}$ a convenient indicator of quantum of fertility. This indicator firstly introduced by Rodriguez and Hobcraft (1980) and called *quintum* of fertility.

Kaplan-Meier survival function also allows us to scrutinize waiting time to progress to a next parity for those who continue childbearing. Using this quality, we can describe the second aspect, *tempo* of fertility. As shown by Rodriguez and Hobcraft (1980), the procedure to obtain summary indicators of tempo of fertility

begins with standardizing the birth function to make $B_{60} = 1$. The procedure provides proportions of women having had a subsequent birth by single months of duration among the women who have another child within 5 years. From this standardized birth function, we can calculate *quartiles*, denoted q_{25}, q_{50} and q_{75}, and defined as the durations by which 25, 50 and 75 percent of the women who have a subsequent birth within 5 years have had this.

The quartiles can be used to calculate three different measures of location and dispersion (Halli and Rao, 1992). The fist one is *median,* i.e. the second quartile ($M = q_{50}$). The second one is *spread,* defined as inter quartile range distribution ($S= q_{75} – q_{25}$). The third one is the *trimean,* a measure of the average birth interval among those women who have their next child within 5 years: $T = [q_{25}+2*q_{50}+q_{75}]/4$. This measure allows detecting asymmetries in the distribution; for instance when the right tail is long, the trimean will be slightly higher than the median (Baschieri and Hinde, 2007).

VIII.1.c. The issue of selectivity in birth order analysis and proportional-hazard regression models

Restraints imposed by sample selection criteria of retrospective cross-sectional surveys, always cause some selectivity issues in birth order analysis (Halli and Rao, 1992). The birth history data includes women from different birth cohorts. Reproductive life spans of women of older cohorts, who have had their births at different ages, are almost fully represented in this data. However, reproductive life spans of women from younger cohorts are only partially covered in birth history data which leads to issues censoring of observations.

In order to be represented in birth history data, a woman should have had at least one live birth. Some women would be more likely to make transition to certain birth orders than their counterparts. In other words, some women would have some certain characteristics that lead them to have child earlier than others (Hinde, 1998). These characteristics could be early marriage, differential contraceptive use and

fecundability or some other reason of heterogeneity in fertility. This more fertile group of women would increasingly be over represented in data. An analysis including this selected group may result in bias towards shorter intervals than an actual cohort of women who has not yet reached the end of their reproductive career (Rodriguez and Hobcraft, 1980). Additionally, timing of reported births varies a great deal as younger women generally give birth more closely to the interview date than older women who may have given birth as far back as 2 decades prior to survey date.

Selectivity effects on birth rates may increase at higher parity orders. The total population is more likely to be represented in the sample of data for the first birth. For second and higher order births there is a selective elimination of couples with lower fecundability. Researcher should note that the fecundability of these couples would become less typical of the general population of reproductive age (Bogue, 1993).

For example; in societies, characterized by strong two-child norm, the third birth constitutes an important step in birth history of a woman. Studies have shown that in such contexts, as in Sweden for instance (Andersson, 1999), that after the third parity order, fourth birth intensity does not decrease, yet rather remain unchanged. The reason could be that the three child mothers are constitute a selected group who are more inclined to give birth than are women in general. As the women progress to additional parity orders, selectivity of the group increases. As a result, the size of the group shrinks but their birth intensities may raise. Rallu and Toulemon (1994) wrote that such kind of selection effect appears massively after the fourth birth in France. According to authors, birth probability at fifth parity is even higher than at third and fourth parities. The reason is after the fourth parity; almost only few high fertility oriented women from lower social classes proceed to have children.

So as to control selection effect, Rodriguez and Hobcraft (1980) proposed to construct life tables by birth order for categories of some demographic control variables. These control variables are age at previous birth (called as relative age), length of previous birth interval and the time from first birth to previous birth or duration of motherhood. These control variables can be regarded as indicators of the

joint impact of the women's fecundability; in terms of exposure, lactatition and contraception and random factors. Therefore for Rodriguez and Hobcraft (1980) variables can be referred to as indicators of *fertility efficiency* or *speed of reproduction*.

However constructing several life tables, by the control variables is an unsatisfactory solution for several reasons (Rodriguez et., al., 1984). Firstly, when survey sample is divided into some subgroups for specific set of characteristics and when the researchers carry out analysis for each group separately usually the sample sizes of the groups become too small for obtaining reliable estimates. Also, comparison of subgroups as these groups could be relatively small in number, could be difficult.

Secondly, selectivity could additionally arise from the different relationships of various socioeconomic and demographic characteristics on the timing of births (Halli and Rao, 1992). For instance, with life table or Kaplan-Meier techniques, it is not possible to simultaneously consider age, education and calendar period variables. One could try to use ordinary regression techniques to ascertain how and to what extent the transition to a next parity is systematically related to characteristics of women. However, ordinary regression techniques do not consider right-censoring problems, which characterize birth history data (Kleinbaum, 1996).

One appropriate way of analyzing birth history data as dealing with both censoring and selectivity problems is to apply proportional-hazard models[1]. The

[1] The proportional hazard models in fact may not totally overcome selection problem too since it is not always possible to include all of the important covariates into an analysis (Blossfeld et. al., 2007). Some remaining unobserved characteristics of respondents can have notable effect on transition rates. The recent developments in event-history analysis enable to estimate an additional error term that describes unobserved heterogeneity. The formula then can be written as follows:

$$h_i(t) = h_0(t)\exp(\beta_1\chi_{1i} + \beta_2\chi_{2i} + ... + \upsilon_i).$$

The term $h_0(t)$ is representing baseline intensity. The sign χ refers to variables and coefficient β refers to corresponding parameter vectors. Here a (log) normally distributed error term υ_i is assumed with standard deviation σ defines propensity to give birth for the some unobserved characteristics of the women. The additional error term may change in the estimated effects of the variables and might clarify true effect of the observed variables (see Lillard, L. and Constantijin, 2003).

Proportional-hazard models, combining aspects of the life table and regression techniques, deal 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 et. al., 2007). Thus the transition rate[2] is considered a function of some covariates. These models assume that heterogeneity in the population under study is captured by a set of covariates included into the model (Halli and Rao, 1992).

The logic of using hazard models in birth order analysis is straightforward. At each duration, t, measured from a previous k^{th} birth (or if we study first birth, from first marriage or from a certain age indicating onset of exposure), a woman is under risk of having her $(k+1)^{th}$ birth. This risk, denoted h(t), gives the intensity of experiencing an event at time t. Thereby, h(t) is the risk or hazard that a woman who had k^{th} order birth t months ago (and who had not had another birth since then) will have $(k+1)^{th}$ birth in month t. In a standard life table analysis all women are assumed to have the same risk at any time segment. Hazard models instead assume that hazard rate, the dependent variable, is dependent on time duration since the start event and on a set of independent variables (x). In other words, hazard models assume that among women the hazard rate *varies* depending upon their individual characteristics. In this case, the risk, h(t), for a woman with a set of **X** characteristics at duration t can be expressed as follows:

$$h(t \mid \mathbf{X}) = h_0(t)*\exp(\beta x)$$

The hazard rate at time t is the product of two quantities. The first one is $h_0(t)$ is the risk at duration t by all women, thus called *baseline hazard* function. In this study it represents, for first birth order; the effect of time since age 14, or marriage, for second and higher birth orders; the effect of time since the birth of the previous child.

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[2] The transition rate also often is labeled *hazard rate*, *intensity, failure rate, risk function* too.

The second quantity is an exponential expression of the linear sum of $\beta_i x_i$, where β stands for beta coefficient and x for covariates. This quantity indicates that the value of the hazard is associated with the value of a given set of covariates. The values of the coefficients are estimated by using maximum likelihood methods.

A hazard ratio is the proportion of the hazard functions of the two individuals. Both individuals are distinguished by their values for two set of **X** predictors:

$$\frac{h(t \mid x = i)}{h(t \mid x = j)} = \frac{h_0(t)*\exp(\beta*i)}{h_0(t)*\exp(\beta*j)} = \exp(\beta)$$

The proportionality factor, exp(β), depends upon the values of the explanatory variables introduced into the model. If exp(β) is greater than 1, then the women in group i have relatively *higher* risk of experiencing the event in month t than those of group j. If it is lower than 1, there is a relatively *lower* risk for women in group I than in group j.

Thus, model results can be interpreted in relation to a reference category of a given covariate (in above expression; individual of characteristic x). A hazard ratio, or *relative risk*, of 1 for a certain level of a covariate indicates that the estimated $(k+1)^{th}$ birth risk is the same as that of the reference group of the same covariate, given that their other characteristics are the same. A relative risk estimated to be greater (smaller) than 1 indicates a higher (lower) birth risk than for the reference category, given their other characteristics are the same.

Hazard models are sometimes distinguished by the assumption concerning the shape of the baseline hazard. In this study we will apply *piecewise constant proportional hazard regression model* to our data. This model is a simple generalization of the proportional hazard regression model in which the baseline hazard function is assumed to have a constant value over time (Blossfeld et. al., 2007). This assumption is relaxed by as partitioning the basic time factor into several sub segments:

$$h_0(t) = \begin{cases} h_1, & t\ (0, \tau_1], \\ h_2, & t\ (\tau_1, \tau_2], \\ \dots & \\ h_j, & t\ (\tau_{j-1}, \infty] \end{cases}$$

The hazard is assumed to be constant within these different time segments, but it can vary between them. This generalization makes the hazard model very useful to study several social processes. It is especially helpful when the researcher does not have a clear idea about the form of the time dependence of the process studied.

In this study, when studying progression to $(k+1)^{th}$ order birth, the basic time variable of the hazard regression is the number of months elapsed since the k^{th} birth (or since age 14 and marriage when we study transition to the first birth). A woman's $(k+1)^{th}$ birth risk is defined as the probability that she will experience a $(k+1)^{th}$ 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.

The duration is measured in months and grouped into several time segments. The estimated effects of covariates are not too sensitive to the segmentation pattern. Nevertheless, because the hazard may change quite rapidly by duration some researchers advise to use narrow duration segments, particularly at the early phases of intervals (Baschieri and Hinde, 2007).

VIII.2. DATA

The data used in this study originates from the 2003 Turkey Demographic and Health Survey (TDHS-2003), the third survey in a series of three national demographic and health surveys conducted in the last fifteen years. The TDHS-2003 was designed to provide information on socioeconomic characteristics of households and women, fertility, mortality, marriage patterns, family planning, maternal and child health, nutritional status of women and children, and reproductive health.

The TDHS-2003 was implemented by Hacettepe University Institute of Population Studies (HUIPS), in collaboration with the General Directorate of Mother and Child Health and Family Planning of the Ministry of Health. Fieldwork for the TDHS-2003 started in the first week of December 2003 and was completed at the middle of May 2004.

Two different questionnaires were used in the TDHS-2003: the Household Questionnaire and the Individual Questionnaire for ever-married women of reproductive ages. International MEASURE/DHS+ survey project model questionnaires and the questionnaires that had been employed in previous Turkish population and health surveys were formed the basis of these two questionnaires.

The Household Questionnaire was basically used to collect information for each person in the household relating to their age, sex, educational attainment, marital status, working status and relationship to the household head. Additionally, the household questionnaire collected data on the socio-economic level of households and if any, welfare of the elderly in these households.

All ever-married women, at ages 15-49, who generally live in the selected households and/or were present in the household on the night before the interview, were eligible for the Ever-Married Women Questionnaire which covered the following information:

- Background characteristics
- Reproductive history

- Marriage
- Knowledge and use of contraceptive methods
- Other information relating to contraception
- Abortions and causes
- Maternal health care and breastfeeding
- Immunization and acute respiratory infections
- Fertility preferences
- Husband's background characteristics
- Women's work and status
- Knowledge of sexually transmitted diseases and AIDS
- Maternal and child anthropometry

The major objective of the TDHS-2003 sample design was to ensure that the survey would provide estimates with acceptable precision for various domains. Therefore, the survey sample is selected through a weighted, multistage, stratified cluster sampling approach. These domains are: 1) Turkey as a whole; 2) urban and rural areas (each as a separate domain); 3) each of the conventional major five regions of the country, namely the West, South, Central, North, and East regions; 4) the 12 geographical sub-regions (NUTS 1). Among these sub-regions, İstanbul and Southeastern Anatolian Project regions were over sampled.

The different populations targeted by the TDHS-2003 survey were defined as the total population for the Household Questionnaire and all ever-married women younger than age 50 for the Individual Questionnaire. First, an adult member of the household was interviewed in order to collect information on household members. Second, all ever-married women age 15-49 were interviewed in the households who were identified as eligible in the household schedule.

The target sample size of the TDHS-2003 was set at 13,160 households so as to complete about 11,000 household interviews. At the end of the sampling procedure 13,049 households selected and 11,659 of them were located and visited during the survey. The TDHS fieldwork teams successfully completed interviews with 10,836 household (83 percent of the original sample). The main reasons that eligible households were not interviewed were that some of the listed dwelling units were found to be vacant at the time of the interview or the household was away for

an extended period. Overall, the household response rate was calculated as 93 percent.

8,477 eligible women were identified in the interviewed households and 96 percent of them were interviewed. The principal reason for non-response was the failure to find the woman at home after repeated visits to the household. The estimated sample errors were given in the final report of the TDHS-2003 (HUIPS, 2004).

The different type of data sets produced from the TDHS-2003 database namely are household data set, women data set, children data set, household member data set, birth history data set and event data set. For the empirical part of this study, I formed data sets using household member data set and women data set. The former one provided information about never-married women (their birth date, mother tongue and literacy characteristics). The latter one provided information on ever-married women about the followings; reproductive history, women's background characteristics, women's work and status, husband's background characteristics and marriage characteristics.

Even though TDHS-2003 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.

The basic information about the data set up used for the empirical analysis is given in Table VIII.2.1. Because, the vast majority of women in Turkey complete their reproductive career in their first marriage; we include women in a first marital union at the time of the interview in analysis. The observation starts at age 14 for all women and for ever-married women; the time of first marriage for the first birth

analysis[3]. For the other birth order, observation begins at the previous birth. The exposure time ended when the child under study was born or for right censored cases with the survey date. Multiple births at the beginning of the observation are excluded from the analysis.

Table VIII.2. 1. Basic information about the data set up

Start event	Censoring	Terminal event	Number of cases
1. Date women turn to age 14	No first birth	Survey Date or First birth	12266
2. Date of the first marriage	No first birth First marriage termination	Survey Date or First birth	7978
3. Birth of the first child	No second birth First marriage termination	Survey Date or Second birth	6689
4. Birth of the second child	No third birth First marriage termination	Survey Date or Third birth	5527
5. Birth of the third child	No fourth birth First marriage termination	Survey Date or Fourth birth	3406

Note: Data set 1 includes all women (never and ever-married women) Data sets 2 to 5 includes only ever-married women.

Table VIII.2.2 presents some basic information on the reporting quality of ever-married respondents: Turkish speaking women provided more complete information on their reproductive histories[4] than their Kurdish counterparts implying that there are some differences in data quality by mother tongue group of women.

[3] Cases with premarital birth excluded from the analysis. This only eliminates very small proportion of the sample. Considering the context of Turkey, presence of these cases can be explained low data quality factor, rather than being real birth before marriage.

[4] 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.

Table VIII.2.2. Percentage of reproductive events for which ever-married respondents reported complete month and year, by mother tongue of women

	Respondent's Date of		Birth Date of Her Children			
	Birth	**Marriage**	**First**	**Second**	**Third**	**Fourth**
All women	79.2	91.2	95.9	94.8	92.2	89.6
Turkish	85.7	94.5	97.8	96.9	95.0	93.3
Kurdish_Knows T.	49.7	79.9	90.9	89.3	88.6	87.2
Kurdish_Don't Know T.	18.8	50.7	71.9	71.6	70.3	73.9

The composition of our study population is presented in Table VIII.2.3 to Table VIII.2.7. The tables contain occurrences and exposure times, by each of the variables we apply in our modeling (next, these variables are described in more detail).

Table VIII.2.3. Sample composition for the analysis of first birth risk (since age 14): Person-months (exposures) and first births (occurrences)

	Exposure time (in months)		Occurrences (first births)	
Covariates-Levels	**N**	**%**	**N**	**%**
Age of women				
14-16	403437	37.9	700	9.6
17-19	302997	28.5	2294	31.5
20-22	176850	16.6	2281	31.3
23-26	86286	8.1	1223	16.8
27-34	77377	7.3	758	10.4
35+	17846	1.7	35	0.5
Calendar Period				
<1981	182004	17.1	1278	17.5
1981-83	75987	7.1	704	9.7
1984-86	83819	7.9	648	8.9
1987-89	95169	8.9	759	10.4
1990-92	105499	9.9	826	11.3
1993-95	118922	11.2	820	11.2
1996-98	135551	12.7	834	11.4
1999-03/04	267843	25.2	1422	19.5
Mother Tongue				
Turkish	906103	85.1	6075	83.3
Kurdish (Know T.)	102562	9.6	755	10.4
Kurdish (Don’t Know T.)	21141	2.0	239	3.3
Literacy				
Literate	135114	12.7	1166	16.0
Illiterate	929420	87.3	6124	84.0
Total	1064535	100.0	7290	100.0

Table VIII.2.4. Sample composition for the analysis of first birth risk (since first marriage): Person-months (exposures) and first births (occurrences)

	Exposure time (in months)		Occurrences (first births)	
Covariates-Levels	**N**	**%**	**N**	**%**
1. ***Duration (in months) (Time-varying)***				
0-9	69398	37.0	1062	14.8
10-12	17741	9.4	1948	27.1
13-15	12784	6.8	992	13.8
16-18	10152	5.4	563	7.8
19-23	13333	7.1	822	11.4
24-29	11019	5.9	648	9.0
30-36	8779	4.7	415	5.8
37-42	5539	2.9	186	2.6
43-60	11008	5.9	312	4.3
61-	28045	14.9	240	3.3
2. ***Calendar Period (Time-varying)***				
<1981	33132	17.6	1282	17.8
1981-83	15579	8.3	684	9.5
1984-86	15851	8.4	635	8.8
1987-89	18184	9.7	752	10.5
1990-92	19847	10.6	811	11.3
1993-95	21347	11.4	806	11.2
1996-98	23080	12.3	821	11.4
1999-01	24442	13.0	848	11.8
2002-03/04	16336	8.7	549	7.6
3. ***Mother Tongue***				
Turkish	154782	82.4	5976	83.1
Kurdish_Know T.	20179	10.7	748	10.4
Kurdish_Don't K.T.	6998	3.7	240	3.3
Other	5839	3.1	223	3.1
4. ***Age at Marriage***				
≤17	71416	38.0	2529	35.2
18-20	58127	31.0	2445	34.0
21-23	34313	18.3	1391	19.4
24≥	23941	12.7	823	11.4
5. ***Childhood Place of Residence***				
Urban	80731	43.0	3116	43.4
Rural	103584	55.2	3946	54.9
Abroad	3483	1.9	125	1.7
6. ***Respondent's Mother's Literacy***				
Yes	117432	62.5	4460	62.1
No	69238	36.9	2692	37.5
Missing	1128	0.6	35	0.5
7. ***Number of Siblings***				
1-4	50423	26.8	1834	25.5
5-6	44805	23.9	1703	23.7
7+	92559	49.3	3650	50.8
Missing	10	0.0	1	0.0

(**Table VIII.2.4 continued**)

	Exposure time (in months)		Occurrences (first births)	
Covariates-Levels	**N**	**%**	**N**	**%**
8. *Education*				
No education/ Primary incomplete	45507	24.2	1585	22.0
Primary complete	110681	58.9	4455	62.0
Secondary complete and higher	31610	16.8	1148	16.0
9. *Working Status Before Marriage*				
Not worked	82064	43.7	3316	46.1
Worked without social security	78427	41.8	2944	41.0
Worked with social security	27130	14.4	923	12.8
Missing	177	0.1	4	0.1
10. *Husband's Education*				
No education/ Primary incomplete	16900	9.0	513	7.1
Primary complete	118115	62.9	4590	63.9
Secondary complete and higher	52783	28.1	2085	29.0
11. *Marriage Arrangement*				
By the couple	75883	40.4	2808	39.1
By the families	103228	55.0	4041	56.2
Escaped/Abducted	8644	4.6	338	4.7
Missing	43	0.0	1	0.0
12. *Brides Money*				
No	151054	80.4	5832	81.1
Yes (in kind/cash)	34163	18.2	1277	17.8
Berdel arrangement	2512	1.3	75	1.0
Missing	69	0.0	3	0.0
13. *Consanguinity*				
Not related	145464	77.5	5589	77.8
First degree relative	32912	17.5	1210	16.8
Other relative	9118	4.9	378	5.3
Missing	303	0.2	10	0.1
14. *Postnuptial Residence*				
Neo-local	67791	36.1	2540	35.3
Patri-local	120007	63.9	4647	64.7
Total	187798	100.0	7187	100.0

Table VIII.2.5. Sample composition for the analysis of second birth risk: Person-months (exposures), second births (occurrences)

	Exposure time (in months)		Occurrences (second births)	
Covariates-Levels	**N**	**%**	**N**	**%**
1. *Duration (in months) (Time-varying)*				
0-9	59105	22.4	49	0.9
10-12	18910	7.2	309	5.8
13-15	17506	6.6	455	8.6
16-18	16028	6.1	451	8.5
19-23	23455	8.9	691	13.0
24-29	22980	8.7	795	15.0
30-36	20962	7.9	642	12.1
37-42	14363	5.4	379	7.2
43-60	28788	10.9	817	15.4
61-	42285	16.0	714	13.5
2. *Calendar Period (Time-varying)*				
<1981	25629	9.7	706	13.3
1981-83	17931	6.8	498	9.4
1984-86	20642	7.8	533	10.0
1987-89	24186	9.1	530	10.0
1990-92	28477	10.8	622	11.7
1993-95	34353	13.0	632	11.9
1996-98	37763	14.3	685	12.9
1999-01	42642	16.1	665	12.5
2002-03/04	32760	12.4	431	8.1
3. *Mother Tongue*				
Turkish	232754	88.0	4322	81.5
Kurdish_Know T.	19131	7.2	591	11.2
Kurdish_Don't K.T.	5951	2.3	215	4.1
Other	6546	2.5	173	3.3
4. *Age at First Birth*				
≤18	42476	16.1	1145	21.6
19-21	84234	31.9	1975	37.3
22-24	74216	28.1	1367	25.8
25≥	63456	24.0	815	15.4
5. Sex of Previous Child				
Male	138301	52.3	2660	50.2
Female	126081	47.7	2642	49.8
5. *Childhood Place of Residence*				
Urban	126698	47.9	2084	39.3
Rural	132219	50.0	3137	59.2
Abroad	5465	2.1	81	1.5

(**Table VIII.2.5 continued**)

Covariates-Levels	Exposure time (in months) N	Exposure time (in months) %	Occurrences (second births) N	Occurrences (second births) %
6. ***Respondent's Mother's Literacy***				
Yes	147162	55.7	3545	66.9
No	116224	44.0	1730	32.6
Missing	996	0.4	27	0.5
7. ***Number of Siblings***				
1-4	84066	31.8	1130	21.3
5-6	64068	24.2	1241	23.4
7+	116247	44.0	2930	55.3
8. ***Education***				
No education/ Primary incomplete	43849	16.6	1343	25.3
Primary complete	163834	62.0	3355	63.3
Secondary complete and higher	56698	21.4	603	11.4
9. ***Working Status Before Marriage***				
Not worked	118846	45.0	2537	47.9
Worked without social security	101428	38.4	2271	42.8
Worked with social security	44041	16.7	490	9.2
Missing	66	0.0	3	0.1
10. ***Husband's Education***				
No education/ Primary incomplete	14956	5.7	408	7.7
Primary complete	161232	61.0	3561	67.2
Secondary complete and higher	88194	33.4	1333	25.1
11. ***Marriage Arrangement***				
By the couple	116129	43.9	1844	34.8
By the families	137628	52.1	3208	60.5
Escaped/Abducted	10605	4.0	249	4.7
Missing	19	0.0	1	0.0
12. ***Brides Money***				
No	116129	43.9	1844	34.8
Yes (in kind/cash)	137628	52.1	3208	60.5
Berdel arrangement	10605	4.0	249	4.7
Missing	19	0.0	1	0.0

(**Table VIII.2.5 continued**)

	Exposure time (in months)		Occurrences (second births)	
Covariates-Levels	**N**	**%**	**N**	**%**
13. ***Consanguinity***				
Not related	214539	81.1	4024	75.9
First degree relative	36310	13.7	992	18.7
Other relative	12965	4.9	280	5.3
Missing	568	0.2	6	0.1
14. ***Postnuptial Residence***				
Neo-local	110470	41.8	1611	30.4
Patri-local	153911	58.2	3690	69.6
Total	264381	100.0	5301	100.0

Table VIII.2.6. Sample composition for the analysis of third birth risk: Person-months (exposures) and third births (occurrences)

	Exposure time (in months)		Occurrences (third births)	
Covariates-Levels	**N**	**%**	**N**	**%**
1. *Duration (in months) (Time-varying)*				
0-9	48384	13.3	32	1.0
10-12	15574	4.3	180	5.6
13-15	14776	4.1	247	7.7
16-18	13912	3.8	217	6.8
19-23	21374	5.9	409	12.8
24-29	22363	6.1	466	14.6
30-36	22449	6.2	366	11.4
37-42	16874	4.6	215	6.7
43-60	41575	11.4	437	13.7
61-	146735	40.3	628	19.6
2. *Calendar Period (Time-varying)*				
<1981	16979	4.7	370	11.6
1981-83	17679	4.9	343	10.7
1984-86	24378	6.7	359	11.2
1987-89	31764	8.7	351	11.0
1990-92	41053	11.3	366	11.4
1993-95	49795	13.7	390	12.2
1996-98	59346	16.3	393	12.3
1999-01	69119	19.0	394	12.3
2002-03/04	53903	14.8	235	7.3
3. *Mother Tongue*				
Turkish	328012	90.1	2427	75.9
Kurdish_Know T.	20744	5.7	451	14.1
Kurdish_Don't K.T.	5487	1.5	210	6.6
Other	9773	2.7	111	3.5
4. *Age at Second Birth*				
≤22	108974	29.9	1705	53.3
23-25	37641	10.3	362	11.3
26-29	108729	29.9	739	23.1
30≥	108672	29.9	393	12.3
5. Sex of Previous Children				
Male-Male	100558	27.6	842	26.3
Female-Female	69966	19.2	895	28.0
Mix	193492	53.2	1462	45.7
6. Survival status of the first child				
Alive at second birth	347464	95.5	2738	85.6
Death at second birth	14246	3.9	407	12.7
Death after S.B.	2307	0.6	53	1.7

(**Table VIII.2.6 continued**)

Covariates-Levels	Exposure time (in months) N	%	Occurrences (third births) N	%
6. ***Childhood Place of Residence***				
Urban	160970	44.2	1030	32.2
Rural	195922	53.8	2151	67.2
Abroad	7125	2.0	18	0.6
7. ***Respondent's Mother's Literacy***				
Yes	219503	60.3	2487	77.8
No	142420	39.1	692	21.6
Missing	2094	0.6	19	0.6
8. ***Number of Siblings***				
1-4	97147	26.7	440	13.7
5-6	95818	26.3	642	20.1
7+	171051	47.0	2117	66.2
9. ***Education***				
No education/ Primary incomplete	62651	17.2	1177	36.8
Primary complete	246335	67.7	1894	59.2
Secondary complete and higher	55030	15.1	127	4.0
10. ***Working Status Before Marriage***				
Not worked	173825	47.8	1596	49.9
Worked without social security	143939	39.5	1471	46.0
Worked with social security	46160	12.7	130	4.1
Missing	93	0.0	1	0.0
11. ***Husband's Education***				
No education/ Primary incomplete	17816	4.9	361	11.3
Primary complete	234617	64.5	2306	72.1
Secondary complete and higher	111584	30.7	532	16.6
12. ***Marriage Arrangement***				
By the couple	135098	37.1	840	26.3
By the families	213293	58.6	2195	68.6
Escaped/Abducted	15613	4.3	163	5.1
Missing	12	0.0	1	0.0
13. ***Brides Money***				
No	313607	86.2	2200	68.8
Yes (in kind/cash)	48258	13.3	933	29.2
Berdel arrangement	2020	0.6	65	2.0
Missing	132	0.0	1	0.0

(**Table VIII.2.6 continued**)

	Exposure time (in months)		Occurrences (third births)	
Covariates-Levels	**N**	**%**	**N**	**%**
14. ***Consanguinity***				
Not related	291495	80.1	2269	70.9
First degree relative	54796	15.1	743	23.2
Other relative	17348	4.8	182	5.7
Missing	378	0.1	5	0.1
15. ***Postnuptial Residence***				
Neo-local	130014	35.7	670	20.9
Patri-local	234002	64.3	2529	79.1
Total	364016	100.0	3199	100.0

Table VIII.2.7. Sample composition for the analysis of fourth birth risk: Person-months (exposures) and fourth births (occurrences)

	Exposure time (in months)		Occurrences (fourth births)	
Covariates-Levels	**N**	**%**	**N**	**%**
1. ***Duration (in months) (Time-varying)***				
0-9	28487	12.7	29	1.6
10-12	9162	4.1	108	6.1
13-15	8685	3.9	131	7.3
16-18	8217	3.7	141	7.9
19-23	12588	5.6	228	12.8
24-29	13239	5.9	282	15.7
30-36	13414	6.0	190	10.6
37-42	10189	4.5	138	7.7
43-60	24822	11.1	253	14.1
61-	95711	42.6	289	16.1
2. ***Calendar Period (Time-varying)***				
<1981	6793	3.0	125	7.0
1981-83	11187	5.0	197	11.0
1984-86	16855	7.5	243	13.6
1987-89	20011	8.9	244	13.6
1990-92	24975	11.1	199	11.1
1993-95	30770	13.7	216	12.1
1996-98	37125	16.5	230	12.9
1999-01	43557	19.4	209	11.7
2002-03/04	33241	14.8	126	7.0
3. ***Mother Tongue***				
Turkish	194170	86.5	1185	66.2
Kurdish_Know T.	17958	8.0	338	18.9
Kurdish_Don't K.T.	5814	2.6	192	10.7
Other	6572	2.9	75	4.2
4. ***Age at Third Birth***				
≤25	99947	44.5	1228	68.6
26-28	55599	24.8	336	18.8
29-30	28776	12.8	127	7.1
32≥	40191	17.9	98	5.5
5. Sex of Previous Children				
3 Males	31864	14.2	235	13.1
3 Females	24788	11.0	328	18.4
1 Male – 2 Female	77188	34.4	655	36.6
2 Male – 1 Female	90675	40.4	570	31.9
6. Survival status of the previous children				
Alive at third birth	179833	80.1	1201	67.1
Death at third birth	39919	17.8	534	29.8
Death after third birth	4761	2.1	54	3.0

(**Table VIII.2.7 continued**)

	Exposure time (in months)		Occurrences (fourth births)	
Covariates-Levels	**N**	**%**	**N**	**%**
6. *Childhood Place of Residence*				
Urban	77123	34.4	485	27.1
Rural	144223	64.2	1302	72.8
Abroad	3168	1.4	2	0.1
7. *Respondent's Mother's Literacy*				
Yes	167553	74.6	1519	84.9
No	55659	24.8	260	14.5
Missing	1302	0.6	11	0.6
8. *Number of Siblings*				
1-4	38573	17.2	160	9.0
5-6	53764	23.9	311	17.4
7+	132176	58.9	1318	73.7
9. *Education*				
No education/ Primary incomplete	61948	27.6	907	50.7
Primary complete	150110	66.9	857	47.9
Secondary complete and higher	12456	5.5	26	1.4
10. *Working Status Before Marriage*				
Not worked	108460	48.3	892	49.9
Worked without social security	103559	46.1	851	47.6
Worked with social security	12494	5.6	46	2.5
11. *Husband's Education*				
No education/ Primary incomplete	18691	8.3	287	16.0
Primary complete	160239	71.4	1308	73.1
Secondary complete and higher	45584	20.3	195	10.9
12. *Marriage Arrangement*				
By the couple	60449	26.9	60449	26.9
By the families	154280	68.7	154280	68.7
Escaped/Abducted	9772	4.4	9772	4.4
Missing	12	0.0	12	0.0
13. *Brides Money*				
No	167794	74.7	1042	58.3
Yes (in kind/cash)	54322	24.2	690	38.6
Berdel arrangement	2353	1.0	56	3.1
Missing	44	0.0	1	0.0

(**Table VIII.2.7 continued**)

	Exposure time (in months)		Occurrences (fourth births)	
Covariates-Levels	**N**	**%**	**N**	**%**
14. ***Consanguinity***				
Not related	165401	73.7	1207	67.5
First degree relative	46281	20.6	469	26.2
Other relative	12618	5.6	109	6.1
Missing	213	0.1	3	0.2
15. ***Postnuptial Residence***				
Neo-local	54315	24.2	291	16.3
Patri-local	170199	75.8	1498	83.7
Total	224514	100.0	1789	100.0

VIII.3. STUDY VARIABLES

The variables used in analysis originate from the household and ever-married data set by taking into consideration the research questions of the study. We have used different number of variables for different birth orders. Descriptions of the all variables used in multivariate models are given in the following paragraphs. In each variable the level selected as reference category is given in italic form.

Baseline variables in the models (time-varying):

Age of women: This variable is the baseline duration for the first birth model (by age of women). The observation of nulliparous women starts when they turn age 14 and finishes at censoring (age when of women at survey date, age of women at first birth and age of women, first birth termination). The duration since age 14 then divided into 6 levels; '14-16', '17-19', '*20-22'*, '23-26', '27-34', and '35+'.

Duration (since previous birth or marriage): This variable the baseline duration for the models progression from marriage to first birth, and other transitions up to fourth birth. Observation starts at previous event (marriage or birth) and finishes at censoring. The duration is measured in months and broken into 10 segments; '0-9', '10-12', '13-15', '16-18', '*19- 23'*, '24-29', '30-36', '37-42', '43-60', '61-'.

Main interest variables:

Calendar Period (time-varying): With this variable we intend to capture the influence of changes in the overall socio-economic and political environment on first birth intensities. There are 8 levels; '<1981', '1981-1983', '1984-1986', '*1987-1989'*, '1990-1992', '1993-1995', '1996-1998', '1999-2003/2004' (for first birth model by age of women) and '1999-2001', '2002-2003/2004'.

Mother Tongue: Identifying an ethnic group is not a straightforward task, and it largely depends on the historical and cultural context. It is not practical to include all possible questions helpful to identify ethnic groups in the TDHS survey. Due to lack of alternative or supplementary data, several studies used the mother tongue information as a proxy of ethnicity in the Turkey's context. Considering the paucity of relevant data such procedures can be accepted as a proper method. However, we opt for not to associate any ethnic identity mother tongue groups in this study.

Mother tongue variable is time-constant and categorical variable with 4 levels; '*Turkish*', 'Kurdish, know Turkish', 'Kurdish, don't know Turkish' and 'Other'. The estimates pertaining to the last level are not reported.

Demographic control variables:

Age at Marriage/ Previous birth: The age of the mother at the marriage is included in the analysis, with four different age categories; '≤17', '18-20', '21-23', '*24*≥'. The age of the mother at the first birth is included in the analysis, with four different age categories; '≤18', '19-21', '22-24', '*25*≥'. The age of the mother at the second birth is included in the analysis, with four different age categories; '≤22', '23-25', '26-29', '*30*≥'. The age of the mother at the third birth is included in the analysis, with four different age categories; '≤25', '26-28', '29-30', '*32*≥'.

Sex of previous children: This variable is used in analysis of progression to second, third and fourth births. The number of categories used change according to previous parity order. For analysis of the second births there are two levels; '*male*' and 'female'. For analysis of the third births there are three levels; 'male-male', 'female-female' and '*mix*'. For analysis of the fourth births there are two levels; '3 males', '3 females', '1 male- 2 female', and '*2 male-1 female'*.

Survival status of the previous children: This variable is introduced into the analysis in order to catch the "replacement" effect due to the loss of a child(ren). We take into account the survival status of the previous child at the beginning of the episode as a covariate but we do not consider the survival status of the children in that particular episode. The levels of this covariate are as in the following: for

progression to third birth; '*alive at second birth*', 'death at second birth' and 'death after second birth' and for progression to fourth birth; '*alive at third birth*', 'death at third birth' and 'death after third birth'. The estimates pertaining death after the beginning of the episodes are not reported in the thesis because in such cases we have to consider two different events within the same episode. In such circumstance, it might be unclear whether the baseline stands for mortality or fertility event (and also these two events might be endogenous). Also, this variable includes survival status of both first and second children together for progression to fourth birth.

Early childhood era variables:

Childhood place of residence: This variable refers to information in which type of place of residence the respondent had spent most of her time until she turns to age 12. The variable has three levels: '*urban*', 'rural' and 'abroad'. The estimates pertaining to the last level are not reported.

Respondent's mother literacy: This variable refers to information literacy ability of the respondent's mother. The variable has three levels: '*yes*', 'no' and 'missing'. The estimates pertaining to the last level are not reported.

Number of siblings: This variable refers to information how many numbers respondents have thus it will show us effect of intergenerational transfer of fertility behavior. The variable has three levels: '*1-4*', '5-6' and '7+'.

Socioeconomic control variables:

Literacy: Literacy level is a commonly used socioeconomic indicator. In this study, it is included in the analysis of first birth risks by age of women with two levels: '*literate*' and 'illiterate'. 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 birth and is not prone to significant change subsequently.

Education: This variable reflecting the individuals' socioeconomic profile. The variable assumed to show how the decline trend has been picked up by different

socioeconomic groups in Turkey. The educational attainment of women was not collected for the whole life course. The inclusion of the highest level of education ever reached in analysis is justified by the assumption that individuals have already concluded their educational path at the time of their first marriage or at the beginning of subsequent birth orders. There are three levels of this variable; 'no education/Primary incomplete', 'Primary complete', '*Secondary complete and higher*'.

Working status before marriage: 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 her first marriage. The variable has three levels; 'not worked', 'worked without social security', '*worked with social security'*, and 'missing'. The estimates pertaining to the last level are not reported.

Husband's education: The educational attainment of husband was not collected for the whole life course. The inclusion of the highest level of education ever reached in analysis is justified by the assumption that individuals have already concluded their educational path at the time of their first marriage or at the beginning of subsequent birth orders. There are there levels of this variable; 'no education/Primary incomplete', 'Primary complete', '*Secondary complete and higher*'.

Socio-cultural control variables:

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". The modern characteristics are selected as reference category in each variable. The estimates pertaining to the last levels in first three variables are not reported.

Marriage Arrangement: This variable has four different levels; '*by the couple'*, 'by the families', 'escaped/abducted' and 'missing'.

Bride's money: This variable has four different levels; '*no*', 'yes (in kind/cash)', 'berdel arrangement' and 'missing'.

Consanguinity: This variable has four different levels; '*not related*', 'first degree relative', 'other relative' and 'missing'.

Postnuptial residence: This variable has two different levels; '*neo-local*' and 'patri-local'.

IX. ANALYSIS OF BIRTH ORDERS

This chapter of the study presents results of the descriptive and multivariate analysis on fertility developments of all ever-married women and of the main mother tongue groups in Turkey. We will investigate progressions to first birth and, subsequently, to the second and up to the fourth birth.

IX.1. PROGRESSION TO THE FIRST BIRTH

The timing of the first birth has a strong effect on both individual and aggregate level fertility. The age at which childbearing begins can influence both the timing of subsequent births and completed family size of a woman. In countries like Turkey, where childbearing out of marital unions is negligible, increasing age at first marriage would cause postponement of first births and this would play an important role in the overall fertility decline. On the other hand, if first birth intervals continuously shorten this may somewhat offset the effects of postponing marriage on fertility.

The first birth has a significant role in the future life of each individual woman as well. In patriarchal settings, the first birth, marking a woman's transition into motherhood, has broad implications for women's changing roles and statuses. In these settings, a newly married woman may opt for to bear a child –preferably, a son- as soon as possible in order to strengthen her bond with the husband and establish her status in family and society in general. From the perspective of a couple; the transition to motherhood/fatherhood can change the couple's relationships with other relatives or other members of the social environment, which in turn improves young couple's social status and simplifies their access to supportive resources (Bühler, 2006).

We will investigate the progression to first birth with two different types of models. In the first, observation begins when a woman enters her reproductive time

span. We define beginning of the reproductive period as age 14[1], aiming to include almost all women who have had a childbearing experience in the analysis. In the second model, observation begins when a woman enters her first marital union; therefore the dependent variable is the first birth interval.

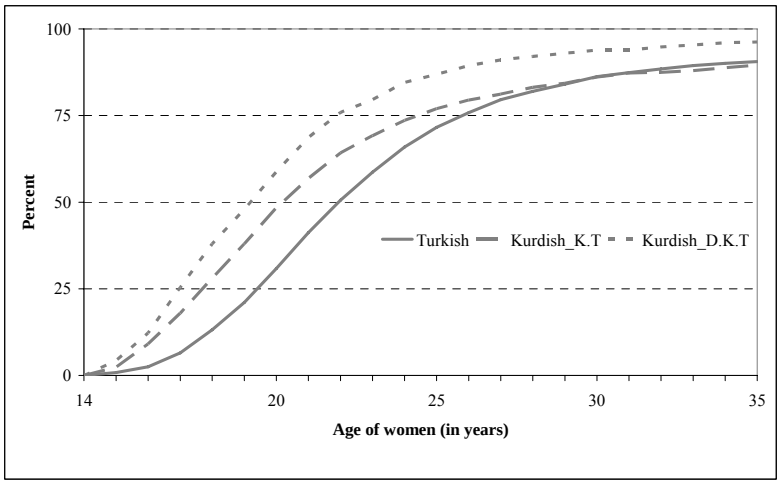
IX.1.a. Progression to the first birth by age of women

Social norms in Turkey strongly prescribe marriage and the birth of at least one child (Hacettepe University et. al., 2004). Descriptive results of our analysis, shown in Figure IX.1.a.1 and Table IX.1.a.1, affirm the fact that voluntary childlessness is indeed not a common outcome; 90 percent of all women have had a first birth by the time they reach age 35. This proportion is the highest among the Kurdish speaking women, those who do not speak Turkish, and among women in the 'no education/primary incomplete' education category.

The age when half of the women have had their first birth could be seen an indicator for the 'timing' of the first birth event. This indicator is estimated as 21.8 years (see, median values -50%- in Table IX.1.a.1) for all women aged 25 and over at survey date. The 'timing' of the first births significantly differs according to women's mother tongue and educational characteristics. Kurdish speaking women (don't know Turkish) have had their first births on average 2.7 years earlier than the Turkish speaking group. As educational level increases, women tend to have their first births later; median ages at first birth rise 5.4 years from the lowest to highest level of education. The differences by mother tongue groups, therefore, can be to a great extent attributed to their differential educational characteristics.

[1] As a convention in demographic studies, the reproductive time span for a typical woman is defined as 15-49. However, in the context of Turkey, some women have had a child earlier than age 15 (most these women were at the end of their reproductive ages on the survey date). Thus, observation begins when a woman turns age 14 in our study.

Figure IX.1.a.1. Cumulative percentage of having first birth: age 14-35, by mother tongue of women



Notes: Estimates derived from Kaplan-Meier survival curve. Computations based on data for women aged 25 and over at time of interview. Kurdish_K.T.: Kurdish speaking (know Turkish) and Kurdish_D.K.T.: Kurdish speaking (don't know Turkish)

Table IX.1.a.1. Ages by which 25, 50 and 75 percent of all women had first birth and the percentage of women who have had first birth at age 35

	Quartiles			
	25%	**50%**	**75%**	**P_{35}**
All Women	19.2	21.8	25.8	90.6
Mother Tongue				
Turkish	19.4	22.0	25.9	90.6
Kurdish_K.T.	17.8	20.3	24.4	89.6
Kurdish_D.K.T.	17.0	19.3	21.8	96.2
Education Level				
No Education/Incomplete Primary	17.9	20.3	23.6	92.5
First level primary	18.9	21.3	24.3	92.5
Second level primary	19.7	22.2	25.5	89.9
High school and higher	22.6	25.8	30.2	84.3

Notes: Calculated from the K-M estimates of the Figure IX.1.a.1. Kurdish_K.T.: Kurdish speaking (know Turkish) and Kurdish_D.K.T.: Kurdish speaking (don't know Turkish)

An estimation of first birth risks of women with a proportional hazard model can provide a better understanding of the first birth developments. The findings of this model, presented in Table IX.1.a.2, shows that relative to intensity in the age group 20-22, propensity to become a mother at teen ages, 14-16, is at quite low level. The risk constantly increases from this age group until the mid 20s. The ages between 20 and 26 are the prime ages for experiencing first birth event.

Table IX.1.a.2. Relative risks (and p-values) of first-birth intensities for all women (15-49), standardized by calendar period, mother tongue and literacy

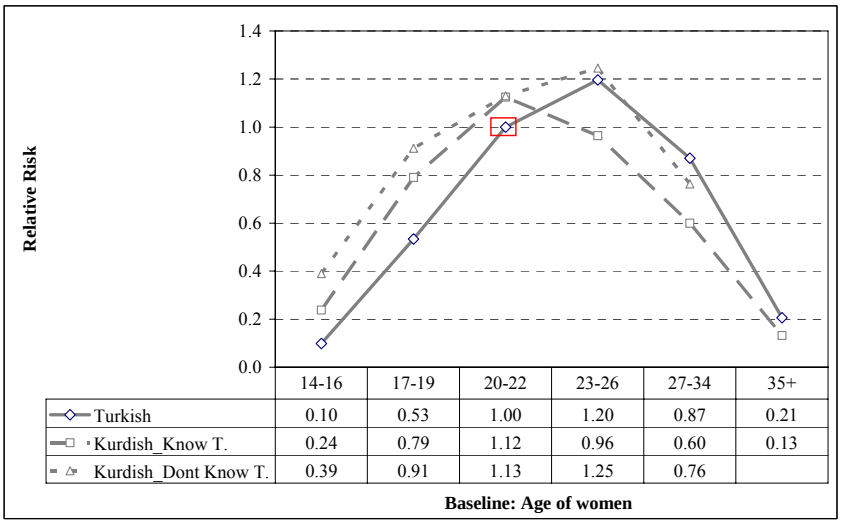
Covariates	Relative Risks	p-value
Age		
14-16	0.12	0.000
17-19	0.55	0.000
20-22	***1(13.88^)***	
23-26	1.15	0.001
27-34	0.84	0.001
35+	0.19	0.000
Calendar Period		
<1981	1.25	0.000
1981-83	1.21	0.002
1984-86	0.97	0.620
1987-89	***1***	
1990-92	0.97	0.574
1993-95	0.85	0.004
1996-98	0.74	0.000
1999-03/04	0.59	0.000
Mother Tongue		
Turkish	***1***	
Kurdish (Know T.)	1.28	0.000
Kurdish (Don't Know T.)	1.59	0.000
Literacy		
Literate	***1***	
Illiterate	1.19	0.001
Log pseudolikelihood	-9954.19	
Wald chi2(df:15)	2706.22	

Notes: ^Absolute risk for reference duration level, per 1000 mother months

Considering first birth developments over calendar periods, relative to its level in '1987-1989', the intensity has reduced almost 40 percent in the last study period. The postponement behavior of first birth risks over time however does not show a continuous trend. First, the propensity has declined until the mid 1980s and after a decade of stagnation, the first-birth intensities reinitiated to decline.

Kurdish speaking women, who don't know Turkish, have their first births the earliest; the risk of this group is nearly 60 percent higher than that of Turkish speaking women and 24 percent higher than that of Kurdish speaking women who know Turkish. The results also show that illiterate women have their first births earlier than their literate counterparts.

Figure IX.1.a.2. Relative risk of first birth, by age and mother tongue. Risk relative to age '20-22' and 'Turkish' speaking categories



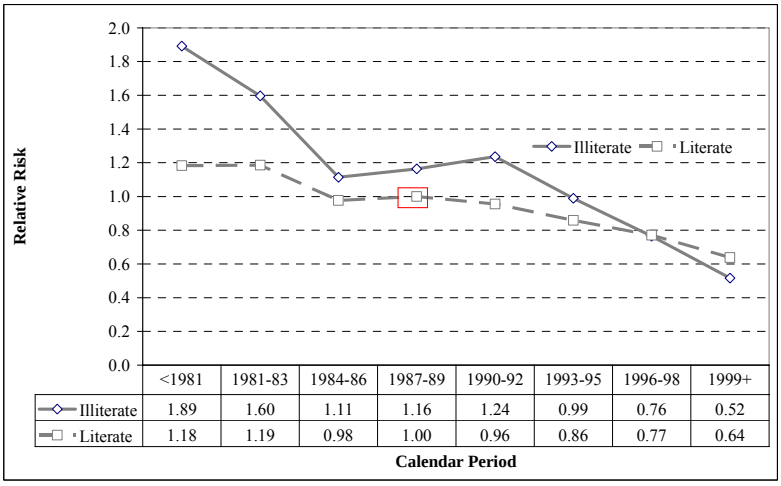
	14-16	17-19	20-22	23-26	27-34	35+
Turkish	0.10	0.53	1.00	1.20	0.87	0.21
Kurdish_Know T.	0.24	0.79	1.12	0.96	0.60	0.13
Kurdish_Dont Know T.	0.39	0.91	1.13	1.25	0.76	

Note: The interaction controls for all other factors presented in the Table IX.1.a.2. P values of the covariate levels and test results of the model are given separately in Appendix A.

The age pattern of entry into motherhood by mother tongue of women shows the 'timing' difference between the Turkish and Kurdish speaking women (see Figure IX.1.a.2). In all age groups preceding 23-26, Kurdish speaking women, who don't know Turkish, have higher risk, meaning that they begin childbearing earlier.

For Turkish speaking women the intensity increases more gradually and reaches its highest level at age 23-26. At this age, propensity of getting into motherhood of the Kurdish speaking women, who don't know Turkish, seems to be as high as the Turkish speaking women. However, the number of Kurdish speaking women, who don't know Turkish, having first birth at this age actually is very few and the finding is not statistically significant. Similarly, there are no women from this group having children at age 35 and over. After the age 23-26, the risk declines substantially for all women, indicating that only a selected group of low-fertile women have a first birth after age 27.

Figure IX.1.a.3. Relative risk of first birth, by calendar period and literacy of women. Risk relative to calendar period '1987-89' and 'literate' category



	<1981	1981-83	1984-86	1987-89	1990-92	1993-95	1996-98	1999+
Illiterate	1.89	1.60	1.11	1.16	1.24	0.99	0.76	0.52
Literate	1.18	1.19	0.98	1.00	0.96	0.86	0.77	0.64

Note: The interaction is controlled for all the other factors presented in the Table IX.1.a.2. P values of the covariate levels and test results of the model are given separately in Appendix A.

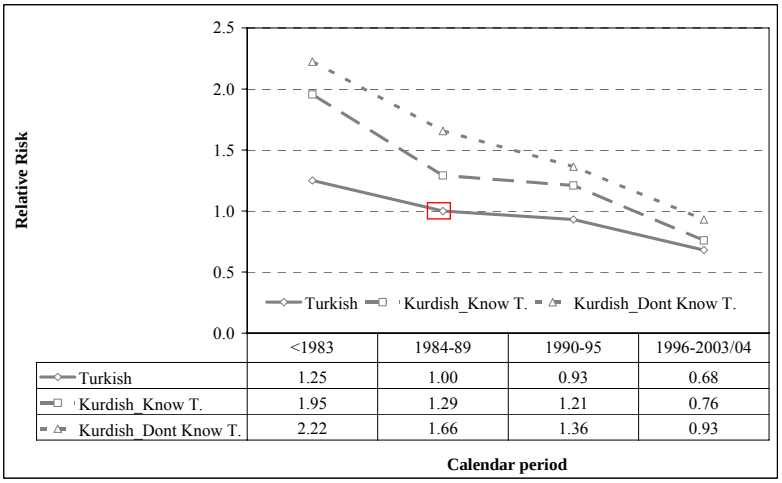
Trends of first birth risk according to literacy of women resemble each other. For the two groups of women the propensity of getting into motherhood shows a decline until the mid 1980s. Between the 1984-1986 and 1990-1992 the risk of having first birth does not show any change. Beginning from mid1990s however, first birth risk show significant decline again. Comparing trends of illiterate and literate women over calendar time; we see sharper decline for the illiterate women.

Presumably, the intensity of first birth has already been declined to low level for literate women in 1980s thus the change occurred with slower tempo. However, the general trend of illiterate women shows that in the last two decades, the rise in age at first marriage has been a more significant change for this group.

Figure IX.1.a.4 shows how the first birth propensities of the mother tongue groups declined over calendar periods. For all groups, the risks have decreased in the second half of the 1980s and then for the Turkish and Kurdish women, who know Turkish, remained almost stable in the first half of 1990s. The postponement of first births regained its momentum in the second half of the 1990s for these two groups, with a more pronounced decline for Kurdish speaking women. The first birth risks have declined notable and the fastest for the Kurdish speaking women, who don't know Turkish, over two decades. Thus those differences between the groups have narrowed over time.

There can be two causes behind the timing differences of first births by the mother tongue groups: the differential time of age at first marriage and/or differential waiting time after the first marriage. The median ages at transition to first marriage indeed show that the Kurdish speaking women marry earlier than their Turkish speaking counterparts, as estimated from the TDHS-98 data: 19.2 for the Turkish speaking population and 17.2 for the Kurdish speaking population (Koç et al. 2000). Therefore, this difference can account for timing differences by mother tongue groups. The second reason suggests that the duration between the first marriage and first birth could be longer for the Turkish speaking women. In the next section of the analysis, we will examine this factor.

Figure IX.1.a. 4. Relative risk of first birth, by calendar period and mother tongue. Risk relative to calendar period '1984-89' and 'Turkish' speaking category



	<1983	1984-89	1990-95	1996-2003/04
Turkish	1.25	1.00	0.93	0.68
Kurdish_Know T.	1.95	1.29	1.21	0.76
Kurdish_Dont Know T.	2.22	1.66	1.36	0.93

Note: The interaction is controlled for all the other factors presented in the Table IX.1.a.2. In order to obtain more robust estimates 8 levels of the calendar period variable are collapsed into 4 levels. P values of the covariate levels and test results of the model are given separately in Appendix A.

IX.1.b. Progression from first marriage to first birth

We estimated a series of Kaplan-Meier survival curves and obtained basic summary measures on first birth intervals. In Table IX.1.b.1, cumulative proportions of women having a first birth at durations, 12th, 24th and 60th months of the first marriage are denoted as B_8, B_{12}, B_{24}, and B_{60} (Quintum).

The cumulative percentage of women at other durations indicates two common features of progression to the first birth event in Turkey. Firstly, values at B_{60}, which can be seen as an analogy of parity progression ratio for the first order births, reveals that the first birth is an almost universal event in Turkey. Almost 9 out of 10 women, by all categories of the variables, have had a first birth. The cumulative proportions at B_{60} by the year of first marriages indicate no decline in the first birth prevalence over the last two decades.

Secondly, nearly 70 percent of women seem to have had their first births within the first two years of their first marriages, suggesting that most women began to get pregnant very soon after they got married. The result is also consistent with the fact that contraceptive use before the first birth is low in Turkey. According to TDHS-2003 findings, 24 percent of ever-married women (15-49) first used contraception before they ever gave birth, and 48 percent first began after having one child (Hacettepe University et.al., 2004).

Table IX.1.b.1. Summary measures for first birth interval: Cumulative proportion of women who have had first birth at 12th, 24th and 60th month after their first marriage by mother tongue, education, year of first marriage and age at first marriage

	B_{12}	B_{24}	B_{60}
All cases	39.1	72.8	93.0
Mother tongue			
Turkish	39.8	73.5	93.1
Kurdish (know Turkish)	36.1	70.7	92.1
Kurdish (don't know Turkish)	31.2	65.3	90.3
Education			
No education/Primary incomplete	34.1	68.6	90.8
Primary complete	41.6	75.4	93.9
Secondary complete and higher	36.5	68.5	91.6
Year of first marriage			
<1980	35.8	69.5	92.2
1980-84	40.4	72.2	93.9
1985-89	40.0	76.3	93.5
1990-94	41.8	74.6	92.4
1995-99	39.5	71.8	92.5
Age at first marriage			
<=17	32.8	67.3	92.4
18-20	43.4	77.0	94.3
21-23	43.8	76.7	93.1
24+	37.9	70.4	89.1

Summary measures given in Table IX.1.b.2 provide more precise information about the timing of first births. The median of first birth interval, calculated on those who had a first child within five years from marriage, $q_{50,}$ is 13.5 months in Turkey. When we compare findings by the mother tongue groups, the timing differences do not seem to be substantial, in general. Similarly, examination of Spread and Trimean measures demonstrates that durations of the first birth interval do not systematically differ by mother tongue, educational background and marriage cohort.

In general, regarding this descriptive section, we can highlight three main findings. First, the two consecutive steps of family formation, marriage and first birth, are very strongly connected events for all women in Turkey; by the time they reach age 30, most women marry and have had their first birth. Second, majority of women have their first birth within 2 years after their marriage and the timing of first births does not change to a great extent according to women's basic individual level characteristics. Third, despite the intense macro level economic and social changes of the last two decades, these patterns seem to be quite stable.

The examination of the first birth event by the age of women in the previous section showed the declining intensity of the first births in the study period, especially over the last decade. The rising age at marriage over time seems to be the driving force of this decline, rather than a longer first birth interval.

However, as explained in the methodology section, the kind of descriptive analysis we presented here has certain limitations. In order to better understand the possible changes and differences at the birth intervals, we need to estimate summary measures as standardized by some demographic control variables, such as, age at marriage for the first birth intervals. Instead of further estimating summary measures, we opt to estimate standardized first birth intensities using proportional hazard regression methods in the next section.

Table IX.1.b.2. Summary measures for first birth interval: Quartile and median values of the childless women who have had a first birth within five years after their first marriage, and Spread and Trimean measures (length of first birth interval) by mother tongue, education, year of first marriage and age at first marriage birth

	q_{25}	q_{50}	q_{75}	q_{100}	Spread	Trimean
All cases	10.0	13.5	22.5	60.0	12.5	14.9
Mother tongue						
Turkish	9.9	13.4	22.2	60.0	12.3	14.7
Kurdish (knows Turkish)	10.3	14.2	23.3	60.0	13.0	15.5
Kurdish (don't know Turkish)	10.5	16.1	25.6	60.0	15.0	17.1
Education						
No education/Primary incomplete	10.0	14.6	23.8	60.0	13.8	15.8
Primary complete	9.9	13.0	21.6	60.0	11.7	14.4
Secondary complete and higher	10.1	14.2	24.2	60.0	14.1	15.6
Year of first marriage						
<1980	10.2	14.6	23.8	60.0	13.6	15.8
1980-84	9.9	13.2	22.8	60.0	12.9	14.8
1985-89	9.7	13.3	21.3	60.0	11.6	14.4
1990-94	9.8	12.9	22.1	60.0	12.3	14.4
1995-99	10.0	13.4	22.8	60.0	12.8	14.9
Age at first marriage						
<=17	10.4	15.2	25.0	60.0	14.7	16.4
18-20	9.8	12.7	21.1	60.0	11.3	14.1
21-23	9.9	12.6	20.7	60.0	10.8	13.9
24+	11.0	13.5	21.9	60.0	10.9	14.9

Note: The tempo measures are estimated from the cumulative proportion of women who have had a subsequent birth within 5 years of marriage ($B_{60} = 1$). Spread (S): $q_{75} - q_{25}$ and Trimean (T): $(q_{25} + 2*q_{50}+q_{75})/4$

IX.1.c. Effects of women's characteristics on the progression to the first birth

In this section, we will investigate determinants of the progression from first marriage to first birth with a series of multivariate event-history models. We aim to understand; 1) the change in the first birth intensity over the two decades, 2) to what extent the first birth risks of the main mother tongue groups differ and how these are conditioned by individual level characteristics of women.

The analysis begins with a series of models, which are constructed by stepwise adding different set of covariates to previous models. In the first step we introduce a main effect model including *duration since the first marriage, calendar period and mother tongue of women.* In the last model we are then able to show the net effect of each covariate on the risk of entry into motherhood while controlling for other determinants. In our piecewise constant proportional hazard regression models, the duration of exposure since the first marriage is divided into 10 segments. It is assumed that the risk of having a first birth is constant within each of these segments but varies between them. This duration variable constitutes the baseline variable for our models. Through the first to the last model, the calendar period and mother tongue variables are the basic variables of interest.

The findings from the basic model, Model 1 in Table IX.1.c.1, show that the propensity of entry into motherhood is the highest between the 10^{th} and 12^{th} month of the first marriage. After the 1^{st} year of marriage, the risk constantly declines and at the end of the 5^{th} year, the first birth turns out to be virtually a very rare event. As mentioned before, women in Turkey typically marry at early stages of their reproductive time span. During these ages, fecundity is at the highest level and they do not use contraception before their first births. These factors together imply that after entering a marital union, women in Turkey try to have their first child as soon as possible.

The duration of the first birth interval slightly increased after the mid 1990s; compared to the reference category, 1987-1989, the first birth risk level was nearly 10 percent smaller during the last decade. The extent of change may not be considered as a highly notable decline. However, this postponement tendency can be seen related to the social consequences of the 3 sharp and successive economic recessions that took place since the mid 1990s in Turkey. The first birth intensities by duration and calendar period do not change in the subsequent models as we introduce new covariates. Model 1 findings also show that first birth intervals of the Kurdish speaking women, who don't know Turkish, are slightly shorter than the others. This small difference, however, disappears when we control for socioeconomic characteristics of women.

Model 2 extends Model 1 with a demographic control variable: *age at first marriage.* The risk of having first birth with respect to age at marriage shows an inverted U-shape relationship. The risk of entry into motherhood is nearly 20 percent smaller for women who married at age '17 and before', and at age '24 and later' than women who married between ages 18 and 23. The first birth interval could be longer for women marrying at earlier ages, because some of these women might not have reached menarche when they got married. Moreover, these women may need more time to develop an intimate relationship with their husbands and psychologically adapt themselves to new circumstances. These factors may reduce the frequency of sexual intercourse and prolong the period of reaching motherhood.

On the other hand, the sample of women, who marry at age 24 and above, have certain individual characteristics that lead them to postpone their first marriages. The same factors likely lead them to postpone first births too. This kind of selection effect may arise due to higher educational attainment and/or employment of women. When we control for socioeconomic characteristics of women in Model 4, the reversed U-type relationship still persist, yet the extent of difference among the covariate levels decreases.

Table IX.1.c.1. Nested event-history models for the progression from the first marriage to the first birth

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Duration (in months) (Time-varying)					
0-9	0.14	0.14	0.14	0.14	0.14
10-12	***1 (119.9^)***	***1 (105.8^)***	***1 (98.6^)***	***1 (89.4^)***	***1(88.4^)***
13-15	0.71	0.71	0.71	0.71	0.71
16-18	0.51	0.51	0.51	0.51	0.51
19-23	0.56	0.57	0.57	0.57	0.57
24-29	0.54	0.54	0.54	0.55	0.55
30-36	0.43	0.44	0.44	0.44	0.45
37-42	0.31	0.31	0.31	0.32	0.32
43-60	0.26	0.26	0.26	0.27	0.27
61-	0.08	0.08	0.08	0.08	0.08
Calendar Period (Time-varying)					
<1981	0.85	0.87	0.86	0.89	0.89
1981-83	0.99	0.99	0.99	0.99	0.99
1984-86	0.96	0.95	0.95	0.95	0.94
1987-89	***1***	***1***	***1***	***1***	***1***
1990-92	1.01	1.01	1.01	1.01	1.01
1993-95	0.94	0.95	0.95	0.95	0.95
1996-98	0.90	0.90	0.91	0.90	0.90
1999-01	0.89	0.88	0.89	0.89	0.90
2002-03/04	0.89	0.89	0.91	0.92	0.92
Mother Tongue					
Turkish	***1***	***1***	***1***	***1***	***1***
Kurdish_Know T.	0.95	0.97	0.93	0.98	0.99
Kurdish_Don't K.T.	0.85	0.87	0.84	0.95	0.97
Demographic Cont. Var.:					
Age at Marriage					
≤17		1.04	1.03	0.96	0.96
18-20		1.23	1.23	1.16	1.16
21-23		1.19	1.20	1.16	1.16
24≥		***1***	***1***	***1***	***1***
Childhood era Cont. Var.:					
Childhood Place of Residence					
Urban			***1***	***1***	***1***
Rural			0.99	0.98	0.98
Respondent's Mother's Literacy					
Yes			***1***	***1***	***1***
No			1.00	1.00	1.00
Number of Siblings					
1-4			***1***	***1***	***1***
5-6			1.07	1.04	1.04
7+			1.14	1.12	1.12

(**Table IX.1.c.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Cont. Var.:					
Education					
No education/ Primary incomplete				1.03	1.02
Primary complete				1.14	1.12
Secondary complete and higher				***1***	***1***
Working Status Before Marriage					
Not worked				1.18	1.17
Worked without social security				1.10	1.09
Worked with social security				***1***	***1***
Husband's Education					
No education/ Primary incomplete				0.81	0.81
Primary complete				0.95	0.95
Secondary complete and higher				***1***	***1***
Socio-cultural Cont. Var.:					
Marriage Arrangement					
By the couple					***1***
By the families					1.05
Escaped/Abducted					1.03
Brides Money					
No					***1***
Yes (in kind/cash)					0.97
Berdel arrangement					0.89
Consanguinity					
Not related					***1***
First degree relative					0.93
Other relative					1.03
Postnuptial Residence					
Neo-local					***1***
Patri-local					1.04

Notes: ^Absolute risk for reference duration level, per 1000 mother months
Results are given in relative risks. P values of the covariate levels and test results of the models are given separately in Appendix A.

Model 3 extends Model 2 with a new set of covariates, controlling for childhood period characteristics: *childhood place of residence, respondent's mother's literacy* and *number of siblings.* The findings suggest that neither the type of childhood place of residence, nor the respondent's mother's literacy has a distinguishing effect on the first birth. Nevertheless, the risk of entry into motherhood increases with the number of siblings; women who have 7 siblings or more have a 14 percent higher risk, relative to women who have 1 to 4 siblings. This result supports our assumption that the relative risk of having a child tends to be smaller for women who grew up in relatively small families. The implications of growing up in a small family for women's own fertility could be several. For instance, since these women grew up in a small family, they would be more prone to embrace a small size family norm.

Model 4 extends Model 3 with socioeconomic control variables; *educational attainment of women, working status before the marriage and husband's education*. The first covariate is educational attainment[2] of women and has 3 different levels. As the age at first marriage variable, there seems to be a similar reversed U- type of relationship between the educational attainment and first birth risks. While the 'primary complete' education level increases the risk compared to 'no education/primary incomplete', education 'secondary complete and higher' level reduces the risk. The impact the 'primary complete' level is actually not substantial; the relative risk is only 14 percent higher than in other educational levels.

The premarital work experience of women has a negative effect on the first birth risk. Even though women who 'had not worked before marriage' and who 'had

[2] Hoem and Kreyenfeld (2006) suggest that educational attainment should be used as a time-varying covariate in event-history models, particularly in the first-birth process. The reason is that the educational participation may not be completed before the respondent enters the risk period of first birth. In the context of Turkey, marriage and having children are two intimately related events and the majority of women (and men) do not continue education after their marriage. Therefore, in this study educational attainment of women is used as a time-constant factor. For the younger generations who have had at least university level education this assumption may not be completely true since some of them continue their educational careers after having married. However, the proportion of this group is rather small in our data. All university and higher educated women (and husbands) are represented in the 'secondary complete and higher' educational category.

worked without social security' have some common socio-cultural traits[3], the former characteristic is more conductive to having a first birth. The premarital work experience with social security has a decreasing effect on first birth risks as well. The majority of these women have a high level of educational attainment and it is very likely that they remain in employment after their marriage as well.

The highly educated and working women, on average, desire to have fewer children than the less educated and not working women. Therefore, they may more incline to postpone their first births.

Husband's educational attainment[4], in contrast to wife's education, shows a positive effect on first birth risks. The first birth interval is the shortest for women who have husbands with 'secondary complete and higher' level educational attainment. The reason why higher education of the husband fosters first birth risks might be related to the 'male breadwinner' institutional context. The more educated husbands usually postpone their family building career until the time they secure their own economic positions. They have higher earnings when they marry which reduces the economic considerations preceding the arrival of first child. Also, they might marry partners with whom they have already developed an intimate and stable relationship. On the other hand, the less educated men, due to a stronger influence of customary social norms, may marry at earlier ages, possibly even before they are able to fulfill the "breadwinner" role themselves. They may need more time to guarantee their own family's livelihood.

Model 5 extends Model 4 with socio-cultural control variables of the family-formation process; *marriage arrangement, bride's money, consanguinity and postnuptial residence.* These attributes can be used to categorize the unions, in broad terms, as "traditional" or "modern". The influence of traditional characteristics of unions on the first birth is not in line with our expectations; the first birth risks

[3] For example, some of 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.

[4] At this stage of analysis, I constructed separate models in order to see whether the influence of women's education on first birth is conditioned by her husband's educational attainment. The effect of women's education did not change when husband's educational attainment is controlled for.

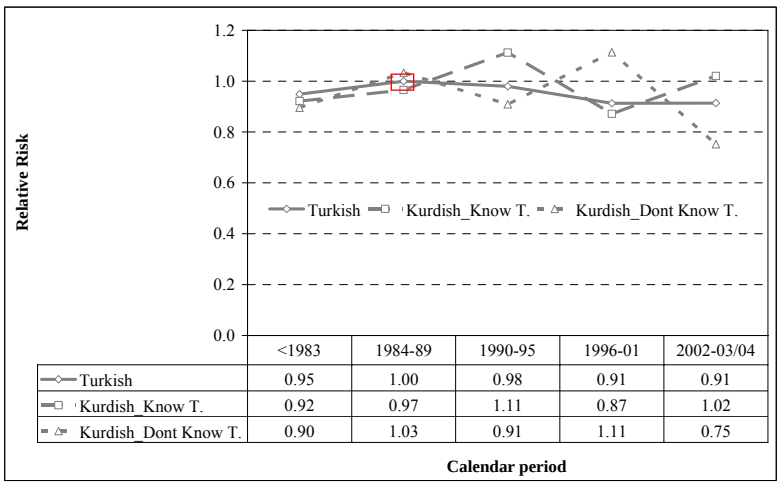
almost do not differ by the type of unions formed. Only those women who married with '*berdel arrangement*[5]' have nearly a 10 percent less risk of first birth than the women who married without any form of bride's money payment. The reason might be that the set of variables we introduced in Model 4 has already captured most of the variance that we expected to disappear by adding the socio-cultural control variables.

I have tried several interactions in Model 5, to investigate whether the main control variables of the calendar period and mother tongue groups, and other covariates under study, affect the progression to first birth interactively. The risk levels estimated in the interaction variables are in general not statistically significant, thus some caution should be exercised in interpretation.

Figure IX.1.c.1 shows findings of the interaction variable between calendar period and mother tongue of women. The trend of the Turkish speaking women appears to be stable until the second half of the 1990s. Since then the risk show moderate decline. The first birth risks of the Kurdish speaking women, who know Turkish, have increased from the beginning of 1980s to the mid 1990s. Thereafter were a sharp decrease in 1996-2001 and a recovery in the last period level. The propensity of getting into motherhood of the Kurdish speaking women, who don't know Turkish, seems to be begun to decline in the first half of 1990s. However, this trend sharply reversed in the second half of the 1990s. These fluctuations that we observe for the Kurdish speaking women seem to be of moderate character too. Thus, we do not see particular behavioral change for this group actually.

[5] *Berdel* is a form of marriage arrangement, which in Kurdish means "in place of the one." Instead of paying the required bride-price to another family, so that his son may have a bride, a father arranges to offer a bride from his own family in compensation (Ersen, 2002).

Figure IX.1.c.1. Relative risk of first birth, by calendar period and mother tongue. Risk relative to calendar period '1984-89' and 'Turkish' speaking category



	<1983	1984-89	1990-95	1996-01	2002-03/04
Turkish	0.95	1.00	0.98	0.91	0.91
Kurdish_Know T.	0.92	0.97	1.11	0.87	1.02
Kurdish_Dont Know T.	0.90	1.03	0.91	1.11	0.75

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.1.c.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 5 levels. P values of the covariate levels and test results of the model are given separately in Appendix A.

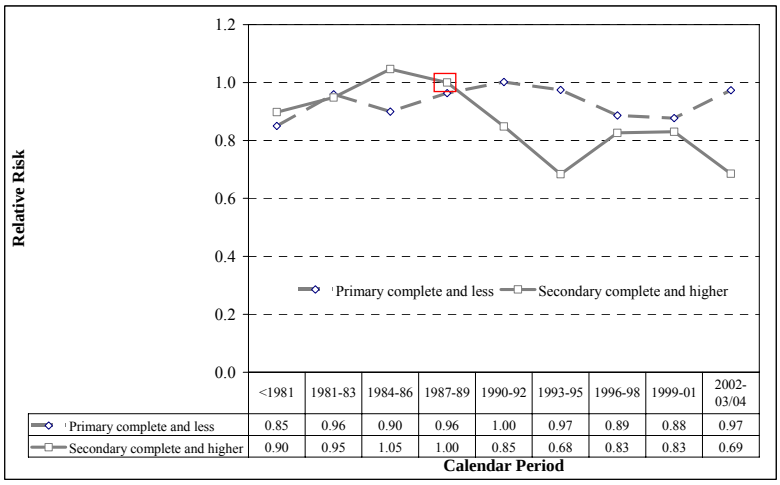
An interaction variable between the calendar period and education of women could perhaps help us to examine the first birth developments in conjunction with macro economic changes of the last two decades (see, Figure IX.1.c.2). In this variable, so as to simplify interpretation[6], we have divided women into two broad categories; as 'Primary complete and less' (lower educated) and 'Secondary complete and higher' (higher educated). We should remind that the labor force participation rate of the first group has always been markedly lower than the second group of women, especially when the formal economy considered.

Along with implementation of neo-liberal economic policies, respectable economic growth rates were achieved until the beginning of the 1990s in Turkey. During this growth period, Gross Domestic Product (GDP) per capita in USD constantly increased and the labor participation rate of men and higher educated women was at higher level than in the late 1990s. Our analysis shows that during the

[6] A preliminary analysis has shown that first birth trends of women with 'No education/Primary complete' and 'Primary complete' are quite similar.

period of mid 1980s to mid 1990s, the higher educated women's first birth intensities declined, while those of low educated women have been fairly stable over the study period. It seems that during these economic expansion years because of the increasing employment opportunities (and/or wages), higher educated women began to postpone their first births somewhat after marriage.

Figure IX.1.c.2. Relative risk of first birth, by calendar period and education. Risk relative to calendar period '1987-89' and 'secondary and higher' category



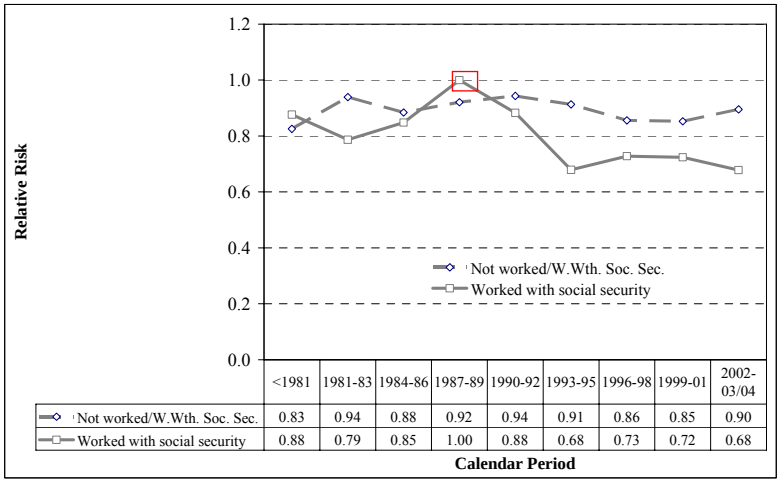
	<1981	1981-83	1984-86	1987-89	1990-92	1993-95	1996-98	1999-01	2002-03/04
Primary complete and less	0.85	0.96	0.90	0.96	1.00	0.97	0.89	0.88	0.97
Secondary complete and higher	0.90	0.95	1.05	1.00	0.85	0.68	0.83	0.83	0.69

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.1.c.1. No education/Primary incomplete and Primary complete/Secondary incomplete categories are collapsed into Primary complete and less category. P values of the covariate levels and test results of the model are given separately in Appendix A.

Since the beginning of the 1990s, there have been 4 major economic recessions in Turkish economy. The employment of the higher educated women has continuously decreased; since some of them left labor market and newly graduates could not enter. The higher educated women, due to decreasing employment options, seem to be pursued more in their family formation career. The empirical finding we presented here may not be seen adequately supporting our argumentation due to fact that we do not use education as time varying covariate. In this case, we can try another interaction variable; between calendar period and premarital working experience of women (see, Figure IX.1.c.3). The figure show somewhat similar trend

we depicted above, if we assume that the women's premarital working status has not been changed after their marriage great extent. It can be said that since the beginning of 1990s, the higher educated and employed women's first birth risks have declined relative to its level throughout 1980s. This implies that they do not have their first birth so rapidly after marriage as they had before 1990s. The lack of significance of socio-cultural dimension of the women's first birth risks when the socioeconomic covariates factors are controlled for indicates that the first birth intensities are more dependent on socioeconomic factors than the socio-cultural one in Turkey.

Figure IX.1.c.3. Relative risk of first birth, by calendar period and premarital work experience. Risk relative to calendar period '1987-89' and 'worked with social security' category



	<1981	1981-83	1984-86	1987-89	1990-92	1993-95	1996-98	1999-01	2002-03/04
Not worked/W.Wth. Soc. Sec.	0.83	0.94	0.88	0.92	0.94	0.91	0.86	0.85	0.90
Worked with social security	0.88	0.79	0.85	1.00	0.88	0.68	0.73	0.72	0.68

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.1.c.1. Not worked and Worked without social security are collapsed into Not worked/W.Wth. Soc. Sec. P values of the covariate levels and test results of the model are given separately in Appendix A.

We constructed some another interaction variable; between the mother tongue and socio-cultural characteristics. The risk levels estimated in the interaction variables are in general again not statistically significant. Also we have not observed any interaction in relationships; the effect of these variables on the first birth risks was in the same direction by mother tongue groups.

IX.2. PROGRESSION TO THE SECOND BIRTH

As we have seen in the previous section, marriage and first birth are two closely interrelated steps in family formation process in Turkey. This section of the study investigates the progression from the first to the second birth. We start analysis with presenting summary measures of the second birth interval and then continue to investigate the effects of women's characteristics on their second birth risks.

The second birth may have a different meaning than the first one. Several factors behind the intention to have child can be summarized under the 3 general headings; social/normative, psychological/emotional and economic/utilitarian motivations (see, Ataca et. al., 2005). The studies of the 'value of children' have demonstrated that because first and second children provide these benefits most people outweigh their childrearing costs. Arrival of the first child is usually valued because this transition provides couples parental status and commitment to their relationship. Second children are valued primarily as siblings for the first (sibling value) (Thomson 2004).

In Turkey, demographic surveys have shown that the number of children desired significantly declines with parity. As almost all childless women want to have at least one child and among the women with one living child, 67 percent want to have another child in the future (50 percent wants to have within 2 years) (Hacettepe University et. al., 2004). Therefore, considering the course of economic, social and fertility developments of the last two decades, at this parity order we expect to observe; 1) longer birth interval than the first one, 2) declining birth intensity over calendar period and 3) more visible differential transition patterns by the mother tongue groups than we observed in the first birth.

IX.2.a. Progression from the first to second birth

Table IX.2.a.1 and 2 present the estimated Kaplan-Meier birth function values for the transition from first to second birth, according to selected characteristics of women. The cumulative proportions of women having a second birth at durations, 12^{th}, 24^{th}, 36^{th}, 48^{th} and 60^{th} months of the first birth are denoted as B_{12}, B_{24}, B_{36}, B_{48}, and B_{60}(Quintum) in Table IX.2.a.1. The value of B_{60} for all cases can be seen as a proximate measure of the overall proportion of women progressing to parity two. This measure reveals that though it is quite common, the second birth is not as universal event as the first birth in Turkey; 77 percent of the one child mothers have a second birth in 5 year after their first birth.

An examination of the summary measures given in the Table IX.2.a.1 and 2 suggest that there are distinctly different transition patterns to second birth. The differences can be mainly observed from two aspects. Firstly, the cumulative proportions of women giving second births at 60^{th} months of the first birth substantially vary by the basic characteristics of the women. As 3 out of the 4 Turkish speaking women give a second birth, almost all the Kurdish speaking women continue childbearing after the first birth. The B_{60} values decline sharply with increasing educational attainment. Among the women with no education/Primary complete degree, the second birth is a nearly universal event; whereas only half of the women with secondary and higher level education has a second birth. The B_{60} values show only a gradual decline throughout the 1980s, but they present noticeable decrease during the 1990s. The proportion of women progressing to parity two is inversely related with age at first birth of women.

Table IX.2.a.1. Summary measures for second birth interval: Cumulative proportion of women who have had first birth at, 12th, 24th, 36th, 48th and 60th month of their first birth by mother tongue, education, year of first marriage and age at first birth

	B_{12}	B_{24}	B_{36}	B_{48}	B_{60}
All cases	5.6	34.0	55.0	67.7	77.2
Mother tongue					
Turkish	4.7	30.4	50.7	63.6	74.1
Kurdish (Knows Turkish)	9.5	52.9	75.5	88.2	92.8
Kurdish (Don't Know Turkish)	14.3	58.6	85.2	92.8	95.5
Education					
No education/Primary incomplete	11.6	52.6	77.5	87.3	91.2
Primary complete	4.5	31.6	53.5	67.1	77.9
Secondary complete and higher	1.4	16.1	27.4	39.6	52.2
Year of first birth					
<1980	8.1	45.5	73.5	83.0	90.4
1980-84	7.9	41.7	62.4	74.4	82.0
1985-89	7.4	36.2	57.2	70.0	80.1
1990-94	4.6	30.2	47.5	62.5	72.8
1995-99	2.8	23.9	42.7	54.6	64.8
Age at first birth					
<=18	7.7	41.1	68.3	80.1	88.1
19-21	6.8	37.0	59.8	71.9	81.5
22-24	4.2	30.9	49.8	64.0	74.6
25+	3.2	25.4	39.6	51.6	60.7

Table IX.2.a.2. Summary measures for second birth interval: Quartile and median values of the one-child mothers who have had a second birth within five years of their first birth, and Spread and Trimean measures (length of second birth interval) by mother tongue, education, year of first birth and age at first birth

	q_{25}	q_{50}	q_{75}	q_{100}	Spread	Trimean
All cases	17.8	26.1	38.7	60.0	20.9	27.2
Mother tongue						
Turkish	18.4	27.5	40.2	60.0	21.8	28.4
Kurdish (Know Turkish)	15.5	22.0	31.8	60.0	16.3	22.9
Kurdish (Don't Know Turkish)	14.2	22.1	27.8	60.0	13.5	21.5
Education						
No education/Primary incomplete	15.0	22.4	30.4	60.0	15.5	22.5
Primary complete	18.5	27.5	40.2	60.0	21.7	28.4
Secondary complete and higher	22.2	34.3	47.6	60.0	25.5	34.6
Year of first birth						
<1980	16.6	23.9	32.9	60.0	16.4	24.3
1980-84	16.3	23.8	35.2	60.0	18.9	24.8
1985-89	17.4	26.0	38.7	60.0	21.3	27.0
1990-94	18.3	27.5	41.2	60.0	22.9	28.6
1995-99	19.3	28.5	42.4	60.0	23.1	29.7
Age at first birth						
<=18	17.4	24.7	34.5	60.0	17.1	25.3
19-21	17.5	25.6	37.2	60.0	19.7	26.5
22-24	18.2	27.6	40.7	60.0	22.5	28.6
25+	18.0	27.6	41.9	60.0	24.0	28.8

Note: The tempo measures are estimated from the cumulative proportion of women who have had a subsequent birth 5 years after the previous one ($B_{60} = 1$). Spread (S): $q_{75} - q_{25}$ and Trimean (T): $(q_{25} + 2*q_{50}+q_{75})/4$

Secondly, tempo of the second births noticeably differs by the basic characteristics of women. The Turkish speaking women's median second birth interval (q_{50}) is the longest among the mother tongue groups with 27.5 months. The median value is 22.0 months for the two Kurdish speaking categories. However, the duration when 75 percent of the Kurdish speaking women have had their second births differs according to their Turkish speaking ability; q_{75} is 4 months longer for

the Kurdish, know Turkish, speaking women. Similarly, Spread and Trimean measures of the two Kurdish speaking categories show that a small group of the Kurdish speaking women, who know Turkish, give second birth in slower tempo than the Kurdish speaking women, who don't know Turkish.

Educational attainment considerably increases the duration of second birth interval. The median and Trimean of second birth interval of the secondary and higher level educated women is nearly 1 year longer that of the women with no education/Primary incomplete educational degree. The change across the year of first birth shows that the second birth interval becoming longer over the last two decades. The median interval between the first and the second births increased from 23.8 to 28.5 months continuously between the first birth cohorts 1980-1984 and 1995-1999. The women who have had their first births at earlier ages also have their second births at earlier ages too. The tempo of the second birth nevertheless does not change from the age group 22-24 and above.

In summary, in contrast with the first births, the childbearing patterns begin to diverse at progression to second birth by the individual level characteristics of women in Turkey. The differential patterns to a great extent they can be attributed to individual characteristics of women. The results also reveal that the overall probability of having a second birth have declined over the two decades as the tempo of second births slowed down.

IX.2.b. Effects of women's characteristics on progression to the second birth

The preliminary examination of the progression to second birth indicates some associations between the individual characteristics of women and their second birth intensities. The direction and strength of the associations may vary by the mother tongue of women. Therefore, in this section we will examine second birth developments as controlling for the determinants at both aggregate and individual level. We aim to understand; 1) the change in the second birth intensity over the two decades, 2) to what extent the second birth risks of the main mother tongue groups differ and how these are conditioned by individual level characteristics of women. As for the analysis of first birth, the multivariate examination of the second births will be carried out with a similar stepwise model construction.

The analysis begins with a main effect model, including *duration since the first birth, calendar period and mother tongue of women.* The findings of baseline hazard from the basic model, Model 1 in Table IX.2.b.1, show that the propensity of second birth reaches its highest level first between 24th and 29th months and thereafter, the risk level gradually declines. Because some women, who have postponed to have second birth more than 3 years after the first one begin to give birth, the risk secondly rise in 43-60 months of the first birth. In fact, in the subsequent models when we control for other determinants, this upsurge becomes more pronounced. This pattern, suggests that there are two groups of women having second births with different timings. The first group most frequently has second birth 2 to 3 years after the first birth. The tempo of the second group is slower, they have second child mainly 3.5 to 5 years after the first birth.

The Model 1 shows that the second birth intensity has declined constantly and sharply until the end of 1980s. Actually, this trend become smoother in Model 2, in which the effect of selectivity is controlled by age at first birth. The decline carried on from 1987 to 1995 in two steps. At first, the second birth intensity was stagnant between 1987 and 1992. After nearly 15 percent fall, it remains unchanged again

between 1993 and 1998. From the mid 1990s onwards the second birth risks has decreased regularly and noticeably again. In the subsequent models, the decline of second birth intensities does not look like as sharp as in the Model 1. That is to say, to a certain extent, additional control of the compositional changes over different socioeconomic and cultural population strata explains the decline in the second birth risk from one period to another. However, still a noticeable overall change over time remains in that last model, implying that overall societal changes have mainly driven the lengthening of second birth intervals.

The two Kurdish speaking groups' propensity to give a second birth is very close each other and their risk of second birth is at least 2 times higher than Turkish speaking women. Inclusion of the other individual level characteristics in the subsequent models substantially reduces the difference. Especially childhood era characteristics of women, controlled for in Model 3, accounts for almost 40 percent of the risk difference. In the last step of our modeling, the Kurdish speaking women only have 40 percent higher second birth risks than the Turkish speaking women. This means that the second birth interval of Turkish speaking women is still notably longer than the other two groups even after the socioeconomic and cultural characteristics of women controlled for.

Model 2 extends Model 1 with a set of demographic control variables: *age at first birth* and *sex of previous children.* The first covariate is seen to be a strong predictor of the second birth risks. The women who give their first birth at older ages have longer second birth interval: relative to women who give first birth at age '24 and over', the progression risk of women who have first child at age '20 and less' is 60 percent higher. The risk differences decline at each further step due to effect of additional covariates. This is actually not an unexpected finding because the impact of age at first birth is correlated with other characteristics of women; like, educational attainment. The second covariate, the sex of the first child, has a small effect on the transition risks. The results show that the one girl mother's second birth interval is shorter than their one-boy mother counterparts. This slight difference remains almost stable in the subsequent models; even after we control for the educational characteristics of women.

Model 3 extends Model 2 with a new set of covariates, controlling for childhood period characteristics: *childhood place of residence, respondent's mother's literacy* and *number of siblings.* According to Model 3; the second birth risk of the women who lived until 12 years old most of the time in a rural area is 20 percent higher than the women who spent her childhood in an urban area. This effect substantially decline when we add socioeconomic and socio-cultural characteristics of women. The respondent's mother's literacy ability has a similar influence on the second birth intensity; those women whose mother was not able to read and write have 22 percent higher transition risk relative to reference category. In the last model of our analysis, however, this effect declines to 11 percent. The patterns for second birth risks with respect to the respondent's number of siblings show that having a smaller number of siblings is shown to be associated with a significantly lower second birth risk. This finding is in the line of our argument that the women from larger families tend to have more children.

The characteristics of women pertaining to their childhood period seem to be explaining a small part of the variation in progression to second births. The effect of these ascribed characteristics are mediated by achieved socioeconomic and socio-cultural factors; only the number of siblings variable still pick up some effect on the transition risks after the other characteristics of the women controlled for.

Model 4 extends Model 3 with socioeconomic control variables; *educational attainment of women, working status before the marriage and husband's education*. There is a strong inverse relationship between the risk of second birth and the women's own education; the higher the women's education, the lower their likelihood of giving a second birth. This gradient by the educational attainment remains when we control for socio-cultural characteristics in the subsequent model, though there is a reduction in the degree of relationship.

Table IX.2.b.1. Nested event-history models for the progression from the first birth to the second birth

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Duration (in months) (Time-varying)					
0-9	0.03	0.03	0.03	0.03	0.03
10-12	0.52	0.52	0.52	0.52	0.52
13-15	0.85	0.85	0.84	0.84	0.84
16-18	0.93	0.93	0.93	0.93	0.93
19-23	***1 (26.9^)***	***1 (18.9^)***	***1 (11.4^)***	***1 (8.6^)***	***1(8.3^)***
24-29	1.23	1.23	1.24	1.25	1.25
30-36	1.14	1.15	1.17	1.18	1.19
37-42	1.03	1.04	1.07	1.08	1.09
43-60	1.17	1.18	1.23	1.25	1.26
61-	0.78	0.81	0.86	0.88	0.89
Calendar Period (Time-varying)					
<1981	1.53	1.37	1.31	1.30	1.29
1981-83	1.39	1.31	1.28	1.29	1.28
1984-86	1.21	1.20	1.18	1.18	1.18
1987-89	***1***	***1***	***1***	***1***	***1***
1990-92	1.00	1.02	1.02	1.03	1.03
1993-95	0.81	0.83	0.84	0.85	0.87
1996-98	0.78	0.80	0.84	0.85	0.86
1999-01	0.66	0.70	0.74	0.75	0.77
2002-03/04	0.54	0.57	0.61	0.63	0.64
Mother Tongue					
Turkish	***1***	***1***	***1***	***1***	***1***
Kurdish_Know T.	2.09	1.95	1.57	1.48	1.40
Kurdish_Don't K.T.	2.15	2.03	1.60	1.46	1.37
Demographic Contrl. Var.:					
Age at First Birth					
≤18		1.62	1.52	1.35	1.28
19-21		1.61	1.53	1.40	1.35
22-24		1.36	1.34	1.27	1.26
25≥		***1***	***1***	***1***	***1***
Sex of Previous Child					
Male		***1***	***1***	***1***	***1***
Female		1.12	1.11	1.11	1.11
Childhood era Control Var.:					
Childhood Place of Residence					
Urban			***1***	***1***	***1***
Rural			1.19	1.11	1.08

(**Table IX.2.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Respondent's Mother's Literacy					
Yes			***1***	***1***	***1***
No			1.22	1.13	1.11
Number of Siblings					
1-4			***1***	***1***	***1***
5-6			1.32	1.28	1.25
7+			1.53	1.47	1.43
Socioeconomic Contr. Var.:					
Education					
No education/ Primary incomplete				1.54	1.42
Primary complete				1.32	1.27
Secondary complete and higher				***1***	***1***
Working Status Before Marriage					
Not worked				1.28	1.22
Worked without social security				1.24	1.18
Worked with social security				***1***	***1***
Husband's Education					
No education/ Primary incomplete				0.96	0.95
Primary complete				0.99	0.97
Secondary complete and higher				***1***	***1***
Socio-cultural Contrl. Var.:					
Marriage Arrangement					
By the couple					***1***
By the families					1.06
Escaped/Abducted					1.15
Brides Money					
No					***1***
Yes (in kind/cash)					1.16
Berdel arrangement					1.09

(**Table IX.2.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Consanguinity					
Not related					***1***
First degree relative					1.06
Other relative					0.94
Postnuptial Residence					
Neo-local					***1***
Patri-local					1.19

Notes: ^Absolute risk for reference duration level, per 1000 mother months
Results are given in relative risks. P values of the covariate levels and test results of the models are given separately in Appendix B.

The premarital working experience with social security significantly decrease propensity to give a second birth. Although the risk levels of the women who worked without social security and who did not work before marriage is quite close each other; the intensity of the former group of women seems to be slightly lower latter than the one. Therefore, we can state that working experience of women has a negative effect on this parity transition.

Husband's education shows almost no effect on the second birth risks. At this stage of analysis, I run Model 4 without including the women's educational attainment covariate in order to see whether the influence of husband's educational attainment is conditioned by women's education. In this additional model too I did not observe any effect of husband education on the progression risks.

The general finding from the socioeconomic set of covariates suggest that the women's higher education and working experience in formal economy prolongs duration of the second birth interval. This relation is also independent from effect of the husband's educational attainment.

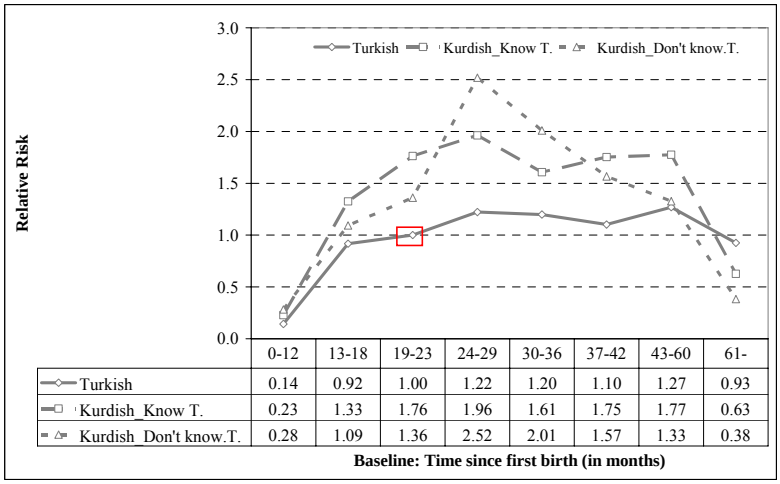
Model 5 extends Model 4 with socio-cultural control variables of the family-formation process; *marriage arrangement, bride's money, consanguinity and postnuptial residence.* Except for the consanguinity with husband; the traditional

characteristics of unions fosters the progression to second birth. These effects, though does not seem to be very strong, are still visible even after the individual level socioeconomic variables controlled for. Inclusion of the cultural set of covariates indeed to certain extent modify (reduces) the effect of some other strong covariates; as mother tongue, age at fist birth, number of siblings, education of women and premarital working experience.

We have tried several interactions in Model 5, to investigate whether the main control variables of the calendar period and mother tongue groups, and other covariates under study, affect the progression to second birth interactively.

The first interaction variable constructed between the baseline duration and mother tongue of women to examine the differential tempo of transition. We may expect that due to later age at marriage and first birth the Turkish speaking women would have their second child faster than the Kurdish speaking women.

Figure IX.2.b.1. Relative risk of second birth, by time since first birth and mother tongue. Risk relative to duration '19-23' and 'Turkish' speaking categories



	0-12	13-18	19-23	24-29	30-36	37-42	43-60	61-
Turkish	0.14	0.92	1.00	1.22	1.20	1.10	1.27	0.93
Kurdish_Know T.	0.23	1.33	1.76	1.96	1.61	1.75	1.77	0.63
Kurdish_Don't know.T.	0.28	1.09	1.36	2.52	2.01	1.57	1.33	0.38

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.2.b.1. P values of the covariate levels and test results of the model are given separately in Appendix B

As seen in the Figure IX.2.b.1, we do not observe such kind of effect: the curve for the Turkish speaking group is not shifted to the left. Rather, the propensity of giving a second birth gradually increase after the first birth until the 24-29 month and then remain almost stable until the 37-42 months. The risk slightly increases during the 43-60 months of the first birth again and then declines. The majority of Turkish speaking mothers aim to have two children at the end of their reproductive life. Even though they have their first birth later than the Kurdish speaking group they are still young enough not to consider biological limitations of childbearing. For this reason may be they postpone their second births and we don't observe a kind of 'catch up' effect. In fact, the risk level in 61 months and over is almost equal to reference category (19-23 months) meaning that notable portion of the Turkish mothers postpone their second birth later than 5 years of their first births.

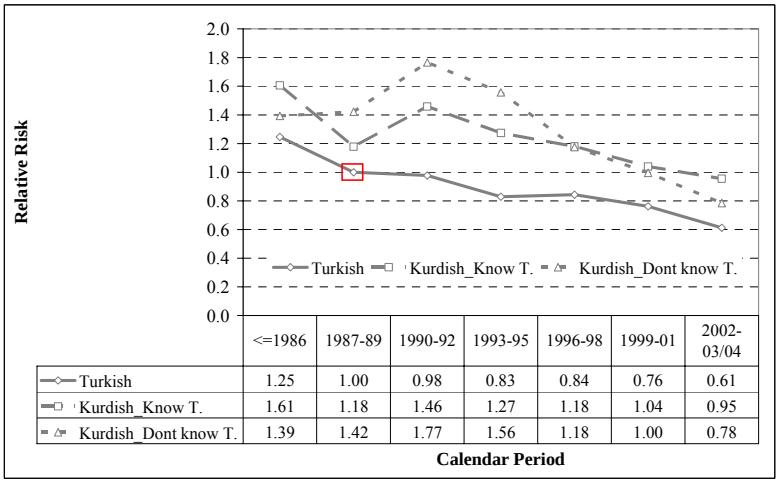
The Kurdish speaking women, who know Turkish, follow a similar transition pattern to that of the Turkish speaking women. Differently than the Turkish speaking group, they have second births great extent within the first 5 year of the first birth. After 61 months of the first birth, few women from this group remains to give a second birth thus the intensity sharply drops. Because of this faster tempo probably the risk at each duration level is higher compare to the Turkish speaking group in the 5 years of first birth.

The second birth intensity of the Kurdish speaking women, who don't know Turkish, shows a fast increase just after the first birth. Their second birth risk reaches the highest level when their first child is between 2 and 2.5 years old. Form this duration level onwards, the risk level sharply and continually decline to low level.

In order to examine the second birth developments of the mother tongue groups over time, we constructed two interaction variables in Model 5 (see, Figure IX.2.b.2 and IX.2.b.3). The first interaction variable, the Figure IX.2.b.2, shows that the Turkish speaking mother's propensity of giving a second birth have notably declined since the 1980s. In other words, they constantly have postponed having a second child after the first one over our study period.

On the other hand, the Kurdish speaking, who don't know Turkish, women's second birth risk presents an increase at the beginning of 1990s firstly, yet starting from the mid 1990s there has been a pronounced decline in their second birth risks. The trend of their 'know Turkish' counterparts; firstly show a rapid decrease in 1987-1989 period level and than secondly presents a rapid increase in 1990-1992 period level. From mid 1990s onwards, their second birth risks have been in a continuous decline too. In the last period level, the second birth intensity of the Kurdish speaking, who don't know Turkish group is seen lower than their 'know Turkish' counterparts.

Figure IX.2.b.2. Relative risk of second birth, by calendar period and mother tongue. Risk relative to calendar period '1987-89' and 'Turkish' speaking categories



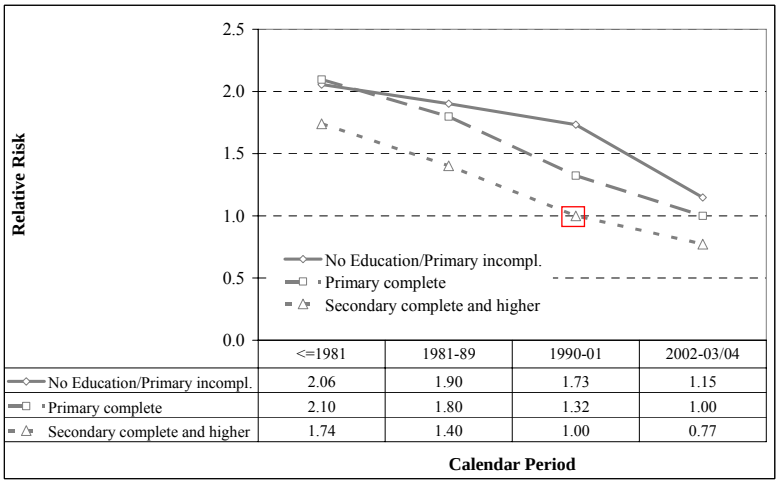
	<=1986	1987-89	1990-92	1993-95	1996-98	1999-01	2002-03/04
Turkish	1.25	1.00	0.98	0.83	0.84	0.76	0.61
Kurdish_Know T.	1.61	1.18	1.46	1.27	1.18	1.04	0.95
Kurdish_Dont know T.	1.39	1.42	1.77	1.56	1.18	1.00	0.78

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.2.b.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 7 levels. P values of the covariate levels and test results of the model are given separately in Appendix B.

An interaction variable between calendar period and education of women could reveal the second birth developments in conjunction with macro economic changes of the last two decades (see, Figure IX.2.b.3). With this interaction variable, we expect to see how the change in the second birth risks has been picked up by different socioeconomic groups in Turkey. We have divided calendar period variable into four broad categories so as to simplify interpretation. The first category; '1981

and before', represents the effect of period when statist economic development policies implemented. The second category; '1981 to 1989' stands for the effect of first era of neo-liberal economic policies. This period characterized by a relatively stable economic growth. The 1990s shows the effect of second era of neo-liberal economic policies which in general were characterized by severe macroeconomic instability in Turkey. Thus the third category; '1990 to 2001' stands for the effect of these volatile economic growth years. In the last period category; '2002-2003/04', represents the effect of recovering high macro economic growth rate.

Figure IX.2.b.3. Relative risk of second birth, by calendar period and education. Risk relative to calendar period '1990-2001' and 'Secondary complete and higher' categories



	<=1981	1981-89	1990-01	2002-03/04
No Education/Primary incompl.	2.06	1.90	1.73	1.15
Primary complete	2.10	1.80	1.32	1.00
Secondary complete and higher	1.74	1.40	1.00	0.77

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.2.b.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 4 levels. P values of the covariate levels and test results of the model are given separately in Appendix B.

As seen in the Figure IX.2.b.3, the second birth intensities of the 'secondary complete and higher' educated women show a constant and rapid decline over the two last decades. The decline process seems to begin even before the volatile economic growth era (1990-2001). Compare to the first period level, the second birth risks of the women with 'No education/Primary incomplete' and 'Primary complete'

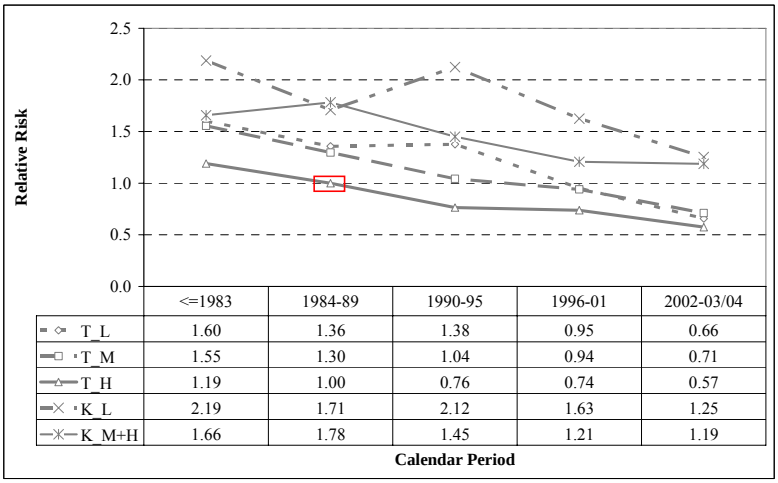
educational attainment show only a slight decline in the 1981-1989 period level. However, the propensity of having a second child presents a substantial decline for these women in 1990-2001 and 2002-03/04 period levels. It seems that the second birth interval of these women began to prolong during the fluctuated economic growth era.

The third interaction variable (see, Figure IX.2.b.4) includes calendar period, mother tongue and education. In order to summarize matter and obtain more robust estimates, we decided to reorganize covariates: 1) mother tongue variable collapsed in two groups; Turkish and Kurdish speaking women, 2) because higher than primary education is relatively rare among the Kurdish speaking women, 'primary complete' (middle) and 'secondary complete and higher' (high) education levels are collapsed into one single category for them. The all Kurdish speaking women, who don't know Turkish, are represented in no education/ Primary incomplete (low) category, together with some of the Kurdish speaking women, who know Turkish, , and 3) 9 levels of the calendar period variable are collapsed into 5 levels.

According to the model findings; the Turkish speaking women's risk of second birth from middle and high educational groups presents a decline over the 5 calendar periods. The risk level of the low educated women seems to begin to decline in the second of half 1990s quite rapidly. In the last period, the risk level of these low and middle educated groups highly converges to that of the highly educated Turkish speaking women. The continuous decline in second birth risks of the Turkish speaking group that we depicted in the Figure IX.2.b.2 is therefore seen to be driven by women from all educational categories.

Looking at the Figure IX.2.b.4; we observe that the Kurdish speaking women's second birth development over calendar time shows variance by their educational attainment. The second birth risk of the Kurdish women with 'middle and high' level education shows a constant and sharp decline, except in the last period level. On the other hand, the low educated Kurdish women's trend first show a fluctuation and then begin to decline constantly in the second half of the 1990s.

Figure IX.2.b.4. Relative risk of second birth, by time since calendar period, mother tongue and educational attainment. Risk relative to calendar period '1984-89' and 'Turkish_H' speaking categories



	<=1983	1984-89	1990-95	1996-01	2002-03/04
T_L	1.60	1.36	1.38	0.95	0.66
T_M	1.55	1.30	1.04	0.94	0.71
T_H	1.19	1.00	0.76	0.74	0.57
K_L	2.19	1.71	2.12	1.63	1.25
K_M+H	1.66	1.78	1.45	1.21	1.19

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.2.b.1. T_Low: Turkish speaking and No education/Primary incomplete, T_Medium: Turkish speaking and Primary complete, T_High: Turkish speaking and Secondary complete and higher, K_Low: Kurdish speaking and No education/Primary incomplete, K_Medium+High: Kurdish speaking and Primary complete/Secondary complete and higher. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 5 levels. P values of the covariate levels and test results of the model are given separately in Appendix B.

Between the 1990 and 1995 was the era when major part of the population displacement and intensive armed conflict took place in the East region. The decline of the second birth intensities of the low educated Kurdish speaking women – especially that of the Kurdish speaking, who don't know Turkish, ones - is seen to be disrupted during these years. The finding implies that the armed conflict in the East region may have had a retarding effect on Kurdish speaking women's fertility decline.

I have constructed some other interaction variables between the socio-cultural traits of marriage formation and mother tongue too. However, the effect of these variables on the second birth risks was not particularly different by the mother tongue of women.

The analysis of progression from first to second birth have show that there are differential transition patterns by the mother tongue groups; the Turkish speaking mothers wait longer than their Kurdish speaking counterparts to give a second birth after the first one. The demographic, socioeconomic and- much lesser extent- socio-cultural characteristics of women are account for great part of the variance. However, The Turkish speaking women's second birth interval is still notably longer than the Kurdish women even after we control for individual level characteristics of women.

Also the intensity of second birth over time has declined differently by the mother tongue of women and their educational characteristics. The Kurdish speaking women, who don't know Turkish, overall have the highest transition risk but also their propensity to give second birth has been declining the fastest in the last decade. The second birth risk of the more educated Kurdish speaking women, on the other hand, is even higher than the low educated Turkish speaking women.

IX.3. PROGRESSION TO THE THIRD BIRTH

This section of the study investigates the progression from the second to the third birth. The strategy for constructing the models for the progression to third birth is the same as for the analyses of the progression to first and second births. We start analysis with estimating summary measures of the third birth interval and then continue with investigating the effects of women's characteristics on their third birth risks.

As populations move towards a modern parity-specific fertility limitation; that is spread of "two-child norm" among different segments of the society, the third child represents the pivotal point in the fertility transition (Van de Kaa 1987, Feeney and Feng 1993, Hoem et al. 2001, Schoen and Canudas-Romo 2006). The studies of the 'value of children' have demonstrated that first and second children provide unique social and psychological benefits that for most people outweigh the childrearing costs. On the other hand, third and higher-order births provide do not have unique value in modern societies since they significantly increase childrearing costs. For this reason higher order births are considered as optional (Thomson, 2004). Therefore declining propensity of third birth to low level is considered as a "critical" indicator, marking the advanced stage of fertility transition.

In Turkey, demographic surveys have shown that among the women with two living children, only 12 percent want to have a third child in the future (Hacettepe University et. al, 2004). Most of the women in Turkey prefer to have at least two children and they manage to reach this parity in general. The women who proceed to higher-order births mainly constitute a more selected group. Accordingly, we argue that the declining propensities of having a third child can be seen a crucial indicator that marks the transition to more modern fertility behavior in Turkey too. We expect to observe in our analysis; first, declining third birth intensity over calendar period and second, larger variation among the mother tongue groups than we observed in progression to second birth.

IX.3.a. Progression from the second to third birth

Table IX.3.a.1 and IX.3.a.2 present summary values, estimated from Kaplan-Meier birth function, for the transition from second to third birth according to selected characteristics of women. The cumulative proportions of women having a third birth at durations, 12^{th}, 24^{th}, 36^{th}, 48^{th} and 60^{th} months of the second birth are denoted as B_{12}, B_{24}, B_{36}, B_{48}, and B_{60} (Quintum) in Table IX.3.a.1. The value of B_{60} for all cases can be seen as a proximate measure of the overall proportion of women progressing to parity three in Turkey. This measure reveals that in Turkey nearly half of the two children mothers have had a third birth within 5 years of their second birth.

The variations in the overall proportion of women progressing from second to the third birth become larger than the previous transitions at first and second parity orders. Especially the low proportion of Turkish speaking mothers is clearly visible, while the majority of their Kurdish speaking counterparts still proceed to third order parity. Namely, of the Turkish speaking mothers the proportion of two-child women reaching third parity within 5 years is 46 percent. The values are considerably higher for the Kurdish speaking women: 80.4 percent for those who speak Turkish as a second language and 96.3 percent for those who don't speak. The Kurdish speaking, who don't know Turkish, women also have their third birth quite fast too; nearly 60 percent give a third birth within 2 years of the second birth.

B_{60} values remarkably decrease by increasing educational attainment of women. B_{60} value of the 'no education/Primary incomplete' category is 1.7 times higher than that of the 'primary complete' one and 4.3 times higher than that of the 'secondary complete and higher' one. This implies that the majority of the women who give third birth are apparently are the lowest educated women in Turkey. The third births of the women who have 'primary complete and lower' degree are mainly concentrated within the first 3 years after the second birth. The majority of the secondary complete and higher educated women, on the other hand, begin to have third child after the second year of their second births.

Table IX.3.a.1. Summary measures for third birth interval: Cumulative proportion of women who have had first birth at , 12th, 24th, 36th , 48th and 60th month of their second birth by mother tongue, education, year of first marriage and age at first birth

	B_{12}	B_{24}	B_{36}	B_{48}	B_{60}
All cases	4.0	22.9	37.9	46.1	52.4
Mother tongue					
Turkish	2.7	18.2	31.5	39.3	46.2
Kurdish (knows Turkish)	9.3	41.2	65.8	75.4	80.4
Kurdish (don't know Turkish)	14.3	59.2	83.9	95.1	96.3
Education					
No education/Primary incomplete	9.3	41.6	64.3	74.4	80.0
Primary complete	2.4	17.9	31.4	39.1	46.1
Secondary complete and higher	0.8	5.0	9.4	13.7	18.6
Year of second birth					
<1980	8.6	36.5	61.2	73.6	80.6
1980-84	5.9	31.6	50.5	59.4	65.1
1985-89	4.0	23.5	36.7	44.5	50.1
1990-94	2.8	20.0	33.0	40.1	46.7
1995-99	2.9	16.4	27.9	34.2	40.3
Age at second birth					
<=22	6.4	33.7	55.4	65.5	72.5
23-25	4.5	24.5	37.7	47.6	54.5
26-29	2.9	17.9	29.2	35.8	41.7
30+	1.2	9.8	18.3	23.5	28.7

The cumulative proportions having a third birth has decreased continuously and dramatically over the five second birth cohorts. The proportion of women reaching parity three within 5 years of the second birth declined from about 65 percent for the second birth cohort of 1980-1984 to about 40 percent for the second birth cohort of 1995-1999. The pace of decline seems to be greater during 1980s than in 1990s. The Table IX.3.a.1 also shows that the cumulative proportions of women having third birth systematically decrease with increasing age at second birth. B_{60} value of the women who gave second birth at age '22 and lower' is 2.5 times higher than that of the women who had their second child at age 30 and over.

Table IX.3.a.2 presents the tempo measures of progression from second to third birth. The median duration of the third birth interval is 26 months and the Trimean measure is 27 months for all women in Turkey.

Table IX.3.a.2. Summary measures for third birth interval: Quartile and median values of the two-child mothers who have had a third birth within five years of their second birth, and Spread and Trimean measures (length of third birth interval) by mother tongue, education, year of second birth and age at second birth

	q_{25}	q_{50}	q_{75}	q_{100}	Spread	Trimean
All cases	18.1	26.1	37.7	60.0	19.6	27.0
Mother tongue						
Turkish	19.4	27.6	39.8	60.0	20.5	28.6
Kurdish (Know Turkish)	16.5	23.6	32.7	60.0	16.2	24.1
Kurdish (don't know Turkish)	15.1	20.8	29.3	60.0	14.2	21.5
Education						
No education/Primary incomplete	16.1	23.5	32.5	60.0	16.4	23.9
Primary complete	19.3	27.7	40.3	60.0	20.9	28.7
Secondary complete and higher	23.1	35.2	49.3	60.0	26.2	35.7
Year of second birth						
<1980	17.3	25.0	35.4	60.0	18.1	25.7
1980-84	16.8	24.4	34.8	60.0	18.0	25.1
1985-89	17.9	25.2	37.2	60.0	19.2	26.4
1990-94	18.2	26.7	39.3	60.0	21.1	27.7
1995-99	19.2	27.4	39.5	60.0	20.3	28.4
Age at second birth						
<=22	17.3	24.9	35.5	60.0	18.1	25.6
23-25	17.8	25.5	37.9	60.0	20.2	26.7
26-29	18.6	26.9	38.9	60.0	20.4	27.8
30+	20.6	29.6	43.3	60.0	22.7	30.7

Note: The tempo measures are estimated from the cumulative proportion of women who have had a subsequent birth 5 years after the previous one ($B_{60} = 1$). Spread (S): $q_{75} - q_{25}$ and Trimean (T): $(q_{25} + 2*q_{50}+q_{75})/4$

The tempo of the third births shows notable differences by the basic characteristics of women and second birth cohorts. The Kurdish speaking women, who don't know Turkish, have their third births the earliest; the median duration (q_{50}) is nearly 21 months and this duration is almost 7 months shorter than of the Turkish speaking women. The tempo of the Kurdish speaking women, who know Turkish, is slightly slower than those of don't know Turkish counterparts.

The tempo of third birth becomes slower and duration of third birth interval becomes longer with the increasing educational attainment. The median and Trimean values of the secondary and higher level educated women is nearly 1 year longer than the women with no education/Primary incomplete educational degree. The change across the year of second birth shows that the third birth interval becoming slightly longer over the last two decades. The median interval between the second and the third births increased from 24.4 to 27.4 months between the second birth cohorts of 1980-1984 and 1995-1999. There is a visible retarding effect of higher age at second birth on the tempo of the third birth. The (q_{50}) is 24.9 months for those who have their second child at age 22 and younger and the same figure increase to 29.6 months for those who have their child at age 30 and over.

As we have seen in this section, regarding the quantum of fertility, the variations over time and by the mother tongue of women are larger in the transition from parity two to three than in the previous parity transitions. Especially the patterns of Turkish speaking women are quite distinctive from the other two groups; less than half of them continue to third order parity, they also do so more slowly. Apart from the change in the quantum, the *tempo* of giving birth to a third child becomes slower over time. As half the two-child mothers aim to stop childbearing, mainly a selected group of women with high fertility intention carry on after the second birth.

IX.3.b. Effects of women's characteristics on the progression to the third birth

The first examination of the progression to third birth indicates strong associations between the individual characteristics of women and their third birth intensities. The direction and strength of the associations however may vary by the mother tongue of women. Therefore, in this section I will examine third birth developments as controlling for the determinants at both aggregate and individual level. We aim to understand; 1) the change in the third birth intensity over the two decades, 2) to what extent the third birth risks of the main mother tongue groups differ and how these are conditioned by individual level characteristics of women. As for the analysis of other parity orders, the multivariate examination of the third births will be carried out with a similar stepwise model construction.

The analysis begins with a main effect model, including *duration since the second birth, calendar period and mother tongue of women.* The findings of baseline hazard from the basic model, Model 1 in Table IX.3.b.1, show that the propensity of third birth reaches its highest level between the 24^{th} and 29^{th} months and 2.5 years after the second birth the third birth risk level continuously declines. In the subsequent models, especially in Model 2 and 3, the slope of decline after 24-29 months becomes smoother than in the Model 1.

As seen in the Model 1, the third birth intensity seems to be declined constantly and sharply since the beginning of 1980s. Actually this trend becomes smoother especially for before 1990, in Model 2 in which effect of later onset of childbearing is controlled by the age at second birth covariate. That is, postponement of second births explains much of the initial decline. The trend of third birth intensity over calendar time show systematic decline in all 5 models actually. Control of the compositional changes over different socioeconomic and cultural population strata explains a fraction of the decline in the third birth risk from one period to another. However, in the last model the third birth risk in '2002 and after' period level is still 36 percent lower relative to the reference category (1987-1989), implying that

overall societal changes -other factors than we control for in the models- have driven the decline of third birth risks too.

We note a considerable risk difference between the categories of mother tongue covariate in the Model 1. The highest progression risk is observed for the Kurdish speaking women, who don't know Turkish; their progression risk is 4.3 times higher than the Turkish speaking women and 0.5 times higher than the Kurdish speaking women who know Turkish. Compare to the results of the Model 1, the extent of difference consequentially declines as we add each group of individual level characteristics of women. Nevertheless, the whole difference does not disappear; variation in the socioeconomic and cultural attributes partially explains the third birth behavior. In the last model of the analysis, the Kurdish speaking, (don't know Turkish), group still have the highest third birth risk among the all mother tongue categories.

Model 2 extends Model 1 with a set of demographic control variables: *age at second birth, sex of previous children and survival status of the first child.* The age at second birth is seen to be a strong predictor of the third birth risks. The older age at the second birth hinders a woman's risk to give birth a third child. Relative to women who give second birth at age '30 and over', the progression risk of women who have second child at age '22 and less' is 2.74 times higher. The risk differences between the levels decline at each further step due to effect of additional covariates. However, the age at second birth remains very influential covariate in the last model too.

The second covariate, the sex composition of the previous children, has a higher influence on progression than in the transition to second parity. The finding can be examined from two aspects. First, the mix sex combination is seen to be the most ideal one; the women who have had 'one male and one female' children have the lowest progression risk. Having two children from the same sex on the other hand fosters the propensity of giving a third birth. Second, the results suggest a notable son preference; a sonless two child mothers' probability of having a third birth is 53 percent higher than that of women with two sons. The differentials by this factor indeed slightly increase across the other models after the socioeconomic and socio-cultural characteristics are controlled for. This suggest that aiming to have at least

one son is one of the major reasons of having a third birth in Turkey and this effect remain stable even after educational characteristics of the couples are controlled for.

Survival status of the first child at the beginning of third birth interval has a substantial effect on the transition risks of women. The women who had lost their first child at their second birth have almost 2 times higher third birth risk.

Model 3 extends Model 2 with a new set of covariates, controlling for childhood period characteristics: *childhood place of residence, respondent's mother's literacy* and *number of siblings.* According to Model 3; the third birth risk of the women who spent their childhood era in a rural area is nearly 30 percent higher than the women who spent their childhood in an urban area. This effect declines to 13 percent when we additionally control for socioeconomic and socio-cultural characteristics of women in the last model. The respondent's mother's literacy ability has a stronger influence on the third birth intensity than in the previous birth orders; those women whose mother was not able to read and write have 44 percent higher transition risk relative to reference category. In the last model of our analysis, this effect declines nearly to 30 percent, meaning that is still substantial. The patterns for third birth risks with respect to the respondent's number of siblings show that having a smaller number of siblings, 1 to 4, is associated with a significantly lower third birth risk. This finding is in the line of our argument about intergenerational transmission of fertility behavior; the women from larger families tend to have more children.

Model 4 extends Model 3 with socioeconomic control variables; *educational attainment of women, working status before the marriage and husband's education*. These selected socio-economic variables were added to the models so as to provide information on how women's socio-economic characteristics affect their propensity of giving birth to a third child. Women's education seems to play a key role in impacting the timing of third birth. There is a strong inverse relationship between the risk to give a third birth and the women's own education. The women with no education/Primary incomplete degree have 94 percent higher third-child intensity in comparison to the women with secondary and higher level educational degree.

Table IX.3.b.1. Nested event-history models for the progression from the second birth to the third birth

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Duration (in months) (Time-varying)					
0-9	0.03	0.03	0.03	0.03	0.03
10-12	0.54	0.53	0.53	0.53	0.53
13-15	0.81	0.80	0.80	0.80	0.79
16-18	0.78	0.77	0.77	0.77	0.77
19-23	***1 (15.5^)***	***1 (6.2^)***	***1 (3.2^)***	***1 (1.6^)***	***1(1.6^)***
24-29	1.17	1.20	1.21	1.22	1.22
30-36	1.00	1.05	1.07	1.08	1.09
37-42	0.84	0.89	0.92	0.93	0.93
43-60	0.76	0.82	0.86	0.87	0.88
61-	0.39	0.42	0.45	0.45	0.46
Calendar Period (Time-varying)					
<1981	1.96	1.45	1.42	1.33	1.30
1981-83	1.65	1.36	1.37	1.32	1.30
1984-86	1.31	1.23	1.23	1.22	1.21
1987-89	***1***	***1***	***1***	***1***	***1***
1990-92	0.85	0.90	0.92	0.92	0.93
1993-95	0.76	0.85	0.87	0.87	0.88
1996-98	0.68	0.78	0.82	0.83	0.85
1999-01	0.58	0.70	0.76	0.77	0.79
2002-03/04	0.45	0.56	0.60	0.62	0.64
Mother Tongue					
Turkish	***1***	***1***	***1***	***1***	***1***
Kurdish_Know T.	2.91	2.36	1.87	1.62	1.48
Kurdish_Don't K.T.	4.34	3.22	2.50	1.94	1.73
Demographic Contrl. Var.:					
Age at Second Birth					
≤22		2.74	2.51	2.28	2.18
23-25		2.13	2.07	1.91	1.84
26-29		1.67	1.60	1.53	1.51
30≥		***1***	***1***	***1***	***1***
Sex of Previous Children					
Male-Male		1.14	1.14	1.14	1.14
Female-Female		1.67	1.71	1.72	1.72
Mix		***1***	***1***	***1***	***1***
Survival status of the first child at second birth					
Alive at second birth		***1***	***1***	***1***	***1***
Death at second birth		2.13	2.08	2.01	1.98

(**Table IX.3.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Childhood era Control Var.:					
Childhood Place of Residence					
Urban			***1***	***1***	***1***
Rural			1.28	1.18	1.13
Respondent's Mother's Literacy					
Yes			***1***	***1***	***1***
No			1.44	1.28	1.27
Number of Siblings					
1-4			***1***	***1***	***1***
5-6			1.13	1.11	1.06
7+			1.56	1.48	1.39
Socioeconomic Contr. Var.:					
Education					
No education/ Primary incomplete				1.94	1.82
Primary complete				1.45	1.41
Secondary complete and higher				***1***	***1***
Working Status Before Marriage					
Not worked				1.51	1.38
Worked without social security				1.44	1.31
Worked with social security				***1***	***1***
Husband's Education					
No education/ Primary incomplete				1.39	1.34
Primary complete				1.21	1.16
Secondary complete and higher				***1***	***1***
Socio-cultural Contrl. Var.:					
Marriage Arrangement					
By the couple					***1***
By the families					1.08
Escaped/Abducted					1.07
Brides Money					
No					***1***
Yes (in kind/cash)					1.31
Berdel arrangement					1.29

(**Table IX.3.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Consanguinity					
Not related					***1***
First degree relative					1.12
Other relative					0.88
Postnuptial Residence					
Neo-local					***1***
Patri-local					1.21

Notes: ^Absolute risk for reference duration level, per 1000 mother months
Results are given in relative risks. P values of the covariate levels and test results of the models are given separately in Appendix C.

The premarital working experience with social security significantly decrease propensity to give a third birth; the relative to risk of the women who worked with social security before their marriage, the women who did not work have 51 percent higher and the women who worked without social security have 44 percent higher risk. When we add socio-cultural attributes of the women these risk differences declines respectively to 38 percent and 31 percent.

Husband's education is found to have a significant influence on the propensity of giving birth to the third child differently than in the previous parity transitions. Even though the degree of influence is not as strong as the women's own educational attainment, the direction of the relationship is the same; a woman's husband's higher educational attainment decreases her risk of having third birth.

Model 5 extends Model 4 with socio-cultural control variables of the family-formation process; *marriage arrangement, bride's money, consanguinity and postnuptial residence.* The impacts of these covariates are in accordance with the hypothesis 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 who herself made the marriage decision together with her husband, whose family did not receive bride's money, who does not have blood relationship with husband, and who began the marital union in a neo-local family had

lower progression risks than women who married in a more customary manner. However, among the four covariates, the bride's money and postnuptial residence characteristics are seen to be more influential ones. 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 started conjugal life in an extended settlement have a 21 percent higher third birth risk when the effects of all other factors are controlled for.

Inclusion of the cultural set of covariates to certain extent modify (reduces) the effect of some other strong covariates; as mother tongue, age at fist birth, number of siblings, education of women, premarital working experience and to a lesser extent husband's education too.

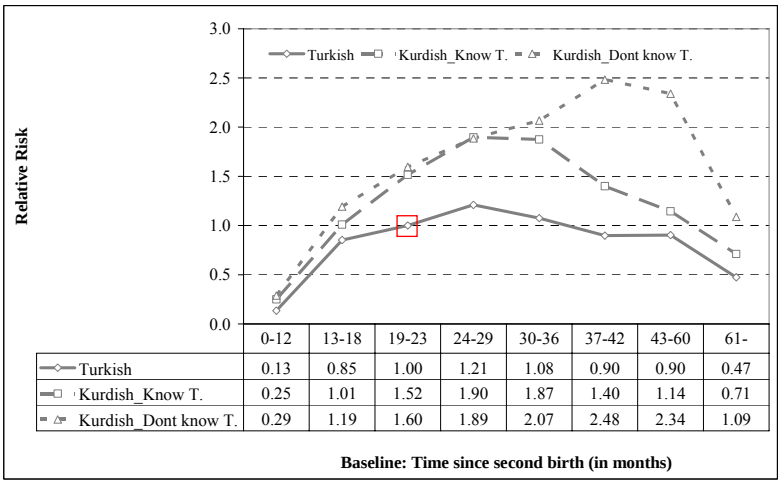
I have constructed several interaction models in Model 5, to examine whether the main control variables of the calendar period and mother tongue groups, and other covariates under study, affect the progression to third birth interactively. The first interaction variable fitted between the baseline duration and mother tongue of women (see, Figure IX.3.b.1).

The finding of the interaction variable reveals the differential tempo of third birth transition by the mother tongue groups. The Turkish speaking women's propensity of giving a third birth gradually increases and reaches its highest level in 24 and 29 month after the second birth. Thereafter, the propensity slowly declines; the third birth risk at '61-'months duration level is nearly half of the reference category (19-23 month after the second birth).

The third birth intensity of the two Kurdish speaking groups rapidly increases after the second birth. The tempo of the Kurdish speaking women, who know Turkish, slows down at 24-29 months duration level and 2.5-3 years after the second birth their third birth intensity begins to decline contentiously. On other hand, third birth intensity of the Kurdish speaking women, who don't know Turkish, continue to fast increase until the 37-42 months after the second birth. The risk level at this duration level is 2.5 times higher than that of the reference category. The intensity of

this group begins to decline steadily and the most rapidly 5 years after the second birth.

Figure IX.3.b.1. Relative risk of third birth, by time since second birth and mother tongue. Risk relative to duration '19-23' and 'Turkish' speaking categories



	0-12	13-18	19-23	24-29	30-36	37-42	43-60	61-
Turkish	0.13	0.85	1.00	1.21	1.08	0.90	0.90	0.47
Kurdish_Know T.	0.25	1.01	1.52	1.90	1.87	1.40	1.14	0.71
Kurdish_Dont know T.	0.29	1.19	1.60	1.89	2.07	2.48	2.34	1.09

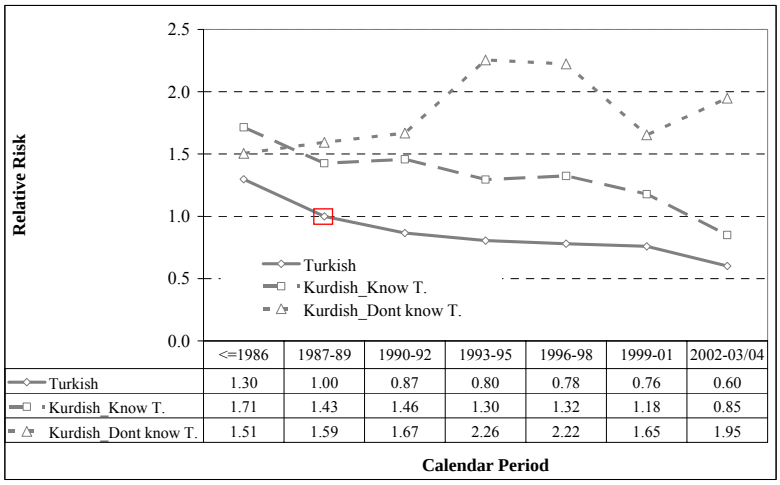
Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.3.b.1. P values of the covariate levels and test results of the model are given separately in Appendix C

In order to examine the third birth developments of the mother tongue groups over calendar time, we constructed another interaction variable in Model 5 (see, Figure IX.3.b.2). The change in the relative risks of third births over calendar period presents differential trends of the Turkish and Kurdish speaking women. The propensity of giving a third birth of the two child Turkish mother shows a continual and sharp decline until the beginning of 1990s. The trend become smoother during 1990s but it is still continual. Presumably, most of the decline in having a third birth behavior occurs before the 1990s and the intensity already declines to low level. Overall, compare to reference category (1987-1989), the third birth risk level is 40 percent lesser in 2002-2003/04 period level.

The third birth developments of the two groups of Kurdish speaking women show quite different trends over the calendar period. The trend of the Kurdish speaking women shows no decline throughout 1980s. During the 1993-1998 period;

when the intensive displacement and armed conflict took place in East region, the third birth risk of the Kurdish speaking mothers, who don't know Turkish, presents a rapid and constant increase. At the end of 1990s, this trend reverse and the third birth intensity of these women declines to almost similar level that of at the beginning of 1990s. On the other hand, the third birth development of the Kurdish speaking group, who know Turkish, presents a significant decline similar to that of Turkish speaking women since the beginning of 1990s.

Figure IX.3.b.2. Relative risk of third birth, by calendar period and mother tongue. Risk relative to calendar period '1987-89' and 'Turkish' speaking category



	<=1986	1987-89	1990-92	1993-95	1996-98	1999-01	2002-03/04
Turkish	1.30	1.00	0.87	0.80	0.78	0.76	0.60
Kurdish_Know T.	1.71	1.43	1.46	1.30	1.32	1.18	0.85
Kurdish_Dont know T.	1.51	1.59	1.67	2.26	2.22	1.65	1.95

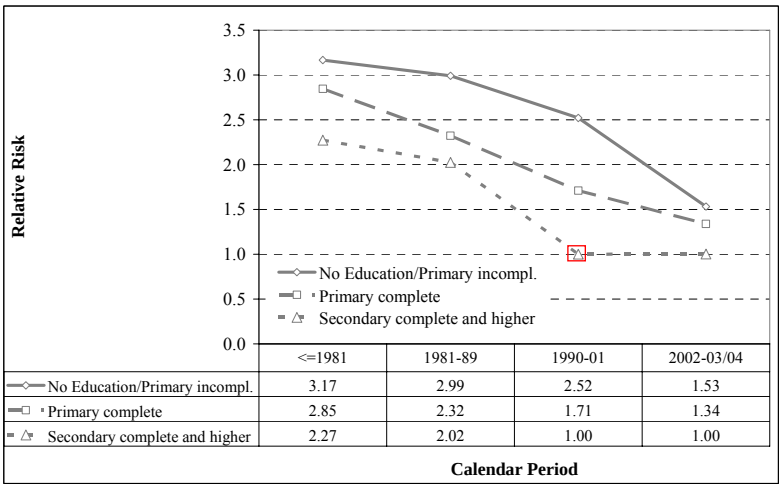
Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.3.b.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 7 levels. P values of the covariate levels and test results of the model are given separately in Appendix C.

An interaction variable between calendar period and education of women could reveal the third birth developments in conjunction with macro economic changes of the last two decades (see, Figure IX.3.b.3). With this interaction variable, we expect to see how the change in the third birth risks has been picked up by different socioeconomic groups in Turkey.

We have divided calendar period variable into four broad categories so as to simplify interpretation. The first category; '1981 and before', represents the effect of

period when statist economic development policies implemented. The second category; '1981 to 1990' stands for the effect of first era of neo-liberal economic policies. This period characterized by a relatively stable economic growth. The 1990s shows the effect of second era of neo-liberal economic policies which in general were characterized by severe macroeconomic instability in Turkey. Thus the third category; '1990 to 2001' stands for the effect of these volatile economic growth years. In the last period category; '2002-2003/04', represents the effect of recovering high macro economic growth rate.

Figure IX.3.b.3. Relative risk of third birth, by calendar period and education. Risk relative to calendar period '1990-2001' and 'Secondary complete and higher' categories



	<=1981	1981-89	1990-01	2002-03/04
No Education/Primary incompl.	3.17	2.99	2.52	1.53
Primary complete	2.85	2.32	1.71	1.34
Secondary complete and higher	2.27	2.02	1.00	1.00

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.3.b.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 4 levels. P values of the covariate levels and test results of the model are given separately in Appendix C.

Figure IX.3.b.3 show that the third birth intensities of the two-child 'secondary complete and higher' educated women show a considerable decline only in 1990-2001 period level. The volatile economic growth era seems to have brought about the severest limiting behavior for this group of women. There seems to have rapid decline over the two decades for the women with 'No education/Primary

incomplete' and 'Primary complete' educational attainment too. The decline process of the 'Primary complete' level educated women is seen to be initiated in 1981-1989 period level. Nevertheless, the trend of 'No education/Primary incomplete' level educated women is seen to hasten particularly in the 1990-2001 period level.

We also aim to examine the third birth trends by the mother tongue group's socioeconomic standing as well. For this reason, we constructed another interaction variable including calendar period, mother tongue and education (see, Table IX.3.b.2). The categories of the covariates are reorganized so as to obtain more robust estimates: 1) mother tongue variable collapsed in two groups; Turkish and Kurdish speaking women, 2) because high educational attainment is rare among the Kurdish speaking women, 'primary complete' (middle) and 'secondary complete and higher' (high) education levels are collapsed into one single category for them. The all Kurdish speaking women, who don't know Turkish, are represented in no education/ Primary incomplete (low) category, together with more than half of (62 percent) the Kurdish speaking women, who know Turkish, and 3) 9 levels of the calendar period variable are collapsed into 2 major levels.

As seen in the Table IX.3.b.2, the fastest decline is observed for the high educated Turkish speaking group. The trend of the low and middle educated Turkish speaking mothers presents a significant decline too. The third birth risk of the Kurdish speaking women, with middle and high education, presents slightly faster decline compare to low educated Kurdish speaking women. However, their risk level is even higher than the low educated Turkish speaking women in the last period.

Lastly, we constructed a set of interaction variables between mother tongue and cultural attributes of women[7]. For each of these interaction covariates, the level related to more 'traditional' behavior fosters the birth risk for the Turkish speaking women. When the bride's money variable is considered, this relationship hold true for the Kurdish speaking women too. However, consanguinity and postnuptial residence does not have such kind of effect on the Kurdish speaking women's third

[7] As seen Table IX.3.b.1; marriage arrangement covariate has much less influence on progression to third birth compare to other cultural variables. Therefore, I did not include this variable in interaction models.

birth risks. In fact, when the Kurdish speaking, who don't know Turkish, category considered; those who married in these traditional manners have lower transition risks than those who married in modern forms. When we also compared the traditionally married Kurdish speaking women, who know Turkish, and their 'don't know' Turkish counterparts, we have observed lower third birth intensities for the former group.

Table IX.3.b.2. Relative risk of third birth, by time calendar period (before and after 1990), mother tongue and educational attainment. Risk relative to calendar period '1990 and after' and 'Turkish_High' categories

	T_Low	T_Medium	T_High	K_Low	K_M+H
Before 1990	3.17	2.53	2.02	3.55	2.95
1990 and after	1.95	1.56	***1***	3.37	2.66
Percent decline	-38.5	-38.4	-50.5	-5.1	-9.8

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.3.b.1. T_Low: Turkish speaking and No education/Primary incomplete, T_Medium: Turkish speaking and Primary complete, T_High: Turkish speaking and Secondary complete and higher, K_Low: Kurdish speaking and No education/Primary incomplete, K_M+H: Kurdish speaking and Primary complete and Secondary complete and higher. Percent decline is estimated as the following: [((1990-)/(-1989))-1]*100. P values of the covariate levels and test results of the model are given separately in Appendix C.

The Turkish speaking women, especially the high educated segment and who married with modern manners, can be seen the pioneers of the enlarging modern and secularized urban sector since the beginning of 1980s in Turkey. The results can thus be seen as supportive of the general idea that the segments of the population that have been more integrated into modernization trends are also characterized by a stronger preference towards smaller family size. The Kurdish speaking women, when they have at least primary complete level education and/or speak Turkish as a second language do follow a similar path to that of Turkish speaking women, though with a slower pace. By contrast, the Kurdish speaking, who don't know Turkish, or without

schooling (or less than primary complete) women can be seen the slowest-movers in the fertility transition referring to period developments.

Table IX.3.b.3. Relative risks (and p-values) of third-birth intensities, by interactions between mother tongue and bride's money, consanguinity, postnuptial residence

	Turkish		K._Know T.		K._Don't K. T.	
	R.	**p**	**R.**	**p**	**R.**	**p**
Brides Money						
Not Paid	***1***		1.44	0.000	1.62	0.000
Paid	1.29	0.00	1.81	0.000	1.99	0.000
Consanguinity						
Not related	***1***		1.50	0.000	1.78	0.000
Related with Husband	1.11	0.112	1.51	0.000	1.58	0.000
Postnuptial Residence						
Neo-local	***1***		1.74	0.000	3.22	0.000
Patri-local	1.27	0.000	1.79	0.000	1.95	0.000

Note: The interaction is controlled for all the other factors presented in Model 5 in the Table IX.3.b.1.
^ For the Kurdish speaking women, Worked without social security and Worked with social security are elaborated as one category. Brides Money: Paid category includes 'Yes (in kind/cash)' and 'Berdel arrangement'. Consanguinity: Related with Husband category includes 'First degree relative' and 'Other relative'.

IX.4. PROGRESSION TO THE FOURTH BIRTH

This section of the study investigates the progression from the third to the fourth birth. The strategy for constructing the models for the progression to fourth birth is the same as for the previous birth orders. We start analysis with estimating summary measures of the fourth birth interval and then continue with investigating the effects of women's characteristics on their fourth birth risks.

As mentioned in the previous section higher-order births in modern societies do not provide unique value since they significantly increase childrearing costs. For this reason higher order births are considered as optional (Thomson, 2004). In the context of Turkey too, 'value of children' studies have shown that whereas the psychological value has risen sharply, there have been a corresponding decrease in the utilitarian/economic value of the children over the last decades. This trend has great extent been attributed to ongoing social change and economic development in the country (Kağıtçıbaşı and Ataca, 2005). The most recent demographic survey and health survey (TDHS-2003) indeed have shown that among the women with three living children, only 4 percent want to have a fourth child in the future (Hacettepe University et. al., 2004).

We can argue then the women who proceed to fourth order birth mainly constitute a much selected group. Accordingly, we expect to observe in our analysis; first, declining fourth birth intensity over calendar period and second, large variation among socio-demographic groups in progression to fourth birth.

IX.4.a. Progression from the third to fourth birth

The summary values, estimated from Kaplan-Meier birth function, for the progression from third to fourth birth according to selected characteristics of women are presented in Table IX.4.a.1 and IX.4.a.2. The cumulative proportions of third children mother having a fourth birth at durations, 12^{th}, 24^{th}, 36^{th}, 48^{th} and 60^{th} months of their third birth are denoted as B_{12}, B_{24}, B_{36}, B_{48}, and B_{60} (Quintum) in Table IX.4.a.1. The value of B_{60} for all cases can be seen as a proximate measure of the overall proportion of women progressing to parity four in Turkey. This measure reveals that in Turkey nearly half of three-child mothers have had a fourth birth within 5 years of their third birth.

As in transition to third birth, we observe notable variations in the overall proportion of women progressing from third to fourth birth too. The proportion of three-child Turkish speaking mothers reaching parity four within 5 years is 43 percent. The values are considerably higher for the Kurdish speaking women: 77.1 percent for those who speak Turkish as a second language and 96.3 percent for those who don't speak. The Kurdish speaking, who don't know Turkish, women also have their fourth birth quite fast too; nearly 60 percent give a fourth birth within 2 years of the second birth.

B_{60} values show remarkable difference by educational attainment of women. Whereas only 17 percent of three-child mothers with 'secondary complete and higher' level education progress to parity four within 5 years of their third birth, B_{60} value of the 'no education/Primary incomplete' category is 74 percent. The cumulative proportions at each year of the third birth suggest also that not only quantum but also tempo of having a fourth birth varies by the education of women. The fourth births of the women who have 'primary complete and lower' degree are mainly concentrated within the first 3 years after the third birth. The majority of the 'secondary complete and higher' level educated women, on the other hand, begin to have fourth child after the second year of their third births.

Table IX.4.a.1. Summary measures for fourth birth interval: Cumulative proportion of women who have had fourth birth at 12th, 24th, 36th , 48th and 60th month after their third birth by mother tongue, education, year of third birth and age at third birth

	B_{12}	B_{24}	B_{36}	B_{48}	B_{60}
All cases	4.4	23.0	37.0	46.1	51.6
Mother tongue					
Turkish	3.5	17.8	28.5	37.5	42.7
Kurdish (Knows Turkish)	6.3	35.2	60.9	70.3	77.1
Kurdish (Don't Know Turkish)	14.3	59.2	83.9	95.1	96.3
Education					
No education/Primary incomplete	7.0	37.1	57.3	58.8	73.6
Primary complete	3.0	15.2	25.7	33.3	39.3
Secondary complete and higher	0.0	4.0	10.0	15.1	16.9
Year of third birth					
<1980	11.6	39.3	63.4	72.5	78.8
1980-84	4.9	28.1	44.4	57.6	63.2
1985-89	4.1	23.4	37.5	46.2	49.7
1990-94	4.3	22.5	34.6	44.3	49.7
1995-99	2.9	16.3	27.9	33.7	39.6
Age at third birth					
≤25	6.6	32.2	51.0	62.0	68.1
26-28	3.9	16.9	28.8	37.5	43.5
29-30	0.5	13.3	20.3	26.9	32.1
32≥	0.6	7.9	12.5	16.3	17.9

The cumulative proportions having a fourth birth shows continuous and dramatic decrease over the third birth cohorts. The proportion of women reaching parity four within 5 years of the third birth declined from about 63 percent for the third birth cohort of 1980-1984 to about 40 percent for the third birth cohort of 1995-1999. However, the pace of decline this decline seems to be slowed down during first half of the 1990s. The Table IX.4.a.1 also shows that the cumulative proportions of women having fourth birth inversely related with age of women at third birth.

Table IX.4.a.2. Summary measures for fourth birth interval: Quartile and median values of the three-child mothers who have had a fourth birth within five years of their third birth, and Spread and Trimean measures (length of fourth birth interval) by mother tongue, education, year of third birth and age at third birth

	q_{25}	q_{50}	q_{75}	q_{100}	Spread	Trimean
All cases	17.8	25.6	37.7	60.0	20.0	26.7
Mother tongue						
Turkish	18.4	26.7	40.6	60.0	22.3	28.1
Kurdish (Know Turkish)	17.4	25.0	34.7	60.0	17.3	25.5
Kurdish (Don't Know Turkish)	14.4	20.8	29.3	60.0	14.8	21.3
Education						
No education/Primary incomplete	16.6	23.9	34.8	60.0	18.2	24.8
Primary complete	19.0	28.0	41.4	60.0	22.4	29.1
Secondary complete and higher	26.1	35.5	40.0	60.0	13.8	34.3
Year of third birth						
<1980	16.5	24.0	33.2	60.0	16.7	24.5
1980-84	17.0	25.6	38.1	60.0	21.1	26.6
1985-89	17.6	24.8	35.8	60.0	29.0	39.1
1990-94	17.7	25.6	39.0	60.0	21.3	27.0
1995-99	19.7	27.5	39.1	60.0	19.4	28.4
Age at third birth						
≤25	17.0	24.8	36.1	60.0	19.1	25.6
26-28	18.6	27.5	39.6	60.0	21.0	28.3
29-30	20.3	26.7	41.7	60.0	21.4	28.8
32≥	18.8	26.4	41.2	60.0	22.5	28.2

Note: The tempo measures are estimated from the cumulative proportion of women who have had a subsequent birth 5 years after the previous one ($B_{60} = 1$). Spread (S): $q_{75} - q_{25}$ and Trimean (T): $(q_{25} + 2*q_{50}+q_{75})/4$

Table IX.4.a.2 presents the tempo measures of progression from third to fourth birth. The median duration of the third birth interval is 26 months and the Trimean measure is 27 months for all women in Turkey. The tempo of the fourth births shows notable differences by the basic characteristics of women and third birth cohorts. The Kurdish speaking, who don't know Turkish, women have their fourth births the earliest; the median duration (q_{50}) is nearly 21 months and this duration is

almost half year shorter than of the Turkish speaking women. The tempo of the Kurdish speaking women, who know Turkish, is between these two groups.

The tempo of fourth birth becomes slower with the increasing educational attainment of women. The median value of the secondary and higher level educated women are nearly 1 year longer than the women with no education/Primary incomplete educational degree. However, because the secondary and higher level educated three-child mothers start to have fourth birth on average quite late; their Spread measure is the shortest among the all mother tongue groups.

The change across the year of third birth shows that the fourth birth interval becoming slightly longer over the last two decades. The median interval between the third and the fourth births increased from 24.0 to 27.5 months between the second birth cohorts of 1980-1984 and 1995-1999.

The tempo of the fourth birth is slightly slower for the women who have had third birth at higher ages. The (q_{50}) is 24.8 months for those who have their third child at age 25 and younger and the same figure increase to 26.4 months for those who have their child at age 32 and over.

The preliminary examination of the progression to fourth birth in this section reveals that the variations over time and by the mother tongue of women are quite similar to that of the transition from parity two to three. Apart from the decline in cumulative proportions women progressing to a fourth birth, the *tempo* of giving birth to a fourth child becomes slightly slower over time too. Also less than half of the Turkish speaking women continue childbearing after the third birth also do so slower than Kurdish speaking women. The fertility differences between the Kurdish speaking, who know Turkish, group and the Kurdish speaking, who don't know Turkish, group become more visible at this parity order as well.

IX.4.b. The effects of women's characteristics on the progression to the fourth birth

The descriptive examination of the progression to fourth birth implies strong associations between the individual characteristics of women and their fourth birth intensities. The direction and strength of the associations however may vary by the mother tongue of women. Therefore, this section examines fourth birth developments as controlling for the determinants at both aggregate and individual level. We aim to understand; 1) the change in the fourth birth intensity over the two decades, 2) to what extent the fourth birth risks of the main mother tongue groups differ and how these are conditioned by individual level characteristics of women. As for the analysis of other parity orders, the multivariate examination of the fourth births will be carried out with a similar stepwise model construction.

The analysis begins with a main effect model, including *duration since the third birth, calendar period and mother tongue of women.* The findings of baseline hazard from the basic model, Model 1 in Table IX.4.b.1, show that the propensity of fourth birth reaches its highest level between the 24th and 29th months and thereafter the fourth birth risk level continuously declines.

Model 1 show that, the fourth birth intensity has declined constantly and sharply since the beginning of 1980s. The fourth birth trend becomes smoother especially before 1990, when the age at third birth covariate controls for the effect of postponement of third births. In the last model of analysis, we observe a systematic decline in the fourth birth intensities except for between 1993 and 1998. Control of the compositional changes over different socioeconomic and cultural population strata explains a fraction of the decline in the fourth birth risk from one period to another. In Model 5 the third birth risk in '2002 and after' period level is 45 percent lower relative to the reference category (1987-1989), implying that overall societal changes -other factors than we control for in the models- have also driven this trend.

Table IX.4.b.1. Nested event-history models for the progression from the third birth to the fourth birth

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Duration (in months) (Time-varying)					
0-9	0.05	0.05	0.05	0.05	0.05
10-12	0.59	0.58	0.58	0.58	0.58
13-15	0.78	0.77	0.77	0.76	0.76
16-18	0.91	0.90	0.90	0.90	0.90
19-23	***1 (16.7^)***	***1 (4.5^)***	***1 (2.3^)***	***1 (1.3^)***	***1(1.3^)***
24-29	1.26	1.27	1.28	1.29	1.30
30-36	0.91	0.93	0.94	0.95	0.96
37-42	0.94	0.96	0.98	0.99	1.00
43-60	0.77	0.79	0.82	0.84	0.85
61-	0.29	0.28	0.30	0.30	0.30
Calendar Period (Time-varying)					
<1981	1.51	1.17	1.17	1.11	1.09
1981-83	1.20	1.01	0.99	0.94	0.93
1984-86	1.03	0.91	0.91	0.88	0.87
1987-89	***1***	***1***	***1***	***1***	***1***
1990-92	0.69	0.75	0.76	0.76	0.76
1993-95	0.62	0.71	0.72	0.71	0.72
1996-98	0.57	0.70	0.71	0.72	0.72
1999-01	0.48	0.63	0.63	0.64	0.64
2002-03/04	0.39	0.52	0.53	0.54	0.55
Mother Tongue					
Turkish	***1***	***1***	***1***	***1***	***1***
Kurdish_Know T.	2.71	2.22	1.95	1.70	1.62
Kurdish_Don't K.T.	4.53	3.66	3.10	2.46	2.29
Demographic Contrl. Var.:					
Age at Third Birth					
≤25		3.40	3.12	2.90	2.84
26-28		2.23	2.14	2.07	2.04
29-30		1.69	1.60	1.59	1.61
32≥		***1***	***1***	***1***	***1***
Sex of Previous Children					
3 Males		1.19	1.20	1.20	1.20
3 Females		1.99	2.08	2.13	2.15
1 Male – 2 Female		1.35	1.33	1.36	1.36
2 Male – 1 Female		***1***	***1***	***1***	***1***
Survival status of the previous children at third birth					
Alive at third birth		***1***	***1***	***1***	***1***
Death at third birth		1.41	1.47	1.49	1.48

(**Table IX.4.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Childhood era Control Var.:					
Childhood Place of Residence					
Urban			***1***	***1***	***1***
Rural			1.18	1.10	1.08
Respondent's Mother's Literacy					
Yes			***1***	***1***	***1***
No			1.29	1.14	1.12
Number of Siblings					
1-4			***1***	***1***	***1***
5-6			1.31	1.30	1.27
7+			1.68	1.59	1.55
Socioeconomic Contr. Var.:					
Education					
No education/ Primary incomplete				2.37	2.24
Primary complete				1.64	1.57
Secondary complete and higher				***1***	***1***
Working Status Before Marriage					
Not worked				1.07	1.04
Worked without social security				1.00	0.97
Worked with social security				***1***	***1***
Husband's Education					
No education/ Primary incomplete				1.30	1.29
Primary complete				1.30	1.28
Secondary complete and higher				***1***	***1***
Socio-cultural Contrl. Var.:					
Marriage Arrangement					
By the couple					***1***
By the families					1.02
Escaped/Abducted					1.29
Brides Money					
No					***1***
Yes (in kind/cash)					1.18
Berdel arrangement					1.42

(**Table IX.4.b.1 continued**)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Consanguinity					
Not related					***1***
First degree relative					1.07
Other relative					1.00
Postnuptial Residence					
Neo-local					***1***
Patri-local					1.05

Notes: ^Absolute risk for reference duration level, per 1000 mother months
Results are given in relative risks. P values of the covariate levels and test results of the models are given separately in Appendix D.

The fourth birth risk difference between the categories of mother tongue covariate is substantial as seen in the Model 1. The highest progression risk is observed for the Kurdish speaking women, who don't know Turkish; their progression risk is 4.5 times more than the Turkish speaking women and 0.7 times more than the Kurdish speaking women, who know Turkish,. Compare to the results of the Model 1, the extent of difference consequentially declines as we add each group of individual level characteristics of women. In the Model 5, the Kurdish speaking, who don't know Turkish, group still have 2.3 higher risk than the Turkish speaking women and 0.4 times more risk than the Kurdish speaking women, who know Turkish,.

Model 2 extends Model 1 with a set of demographic control variables: *age at third birth,* sex *of previous children and survival status of the previous children.* The age at third birth has a strong influence on the fourth birth risks. The older age at the third birth hinder a woman's risk to give birth a fourth child. In the Model 1, Relative to women who give third birth at age '32 and over', the progression risk of women who have third child at age '25 and less' is 3.4 times higher. The risk differences between the levels decline at each further step due to effect of additional covariates. However, the age at third birth remains very influential covariate in the last model too.

The sex composition of the previous children has a high influence on the transition to parity four. The women who have had 'two male and one female' children have the lowest progression risk, thus this form of mix sex combination is seen to be the most ideal one for couples with three children. Having three children from the same sex on the other hand fosters the propensity of giving a fourth birth. However this effect is particularly visible for mother with three daughters. The results show that son preference plays also a notable role in probability of having a fourth birth. The effect of sex of previous children covariate increases across the other models after the socioeconomic and socio-cultural characteristics are controlled for.

Survival status of the first and/or second child at the beginning of fourth birth interval is another important determinant of the fourth birth intensity. The women who had lost their first and/or second child at their third birth have almost 50 percent higher progression risk.

Model 3 extends Model 2 with a new set of covariates, controlling for childhood period characteristics: *childhood place of residence, respondent's mother's literacy* and *number of siblings.* Model 3 reveals that the fourth birth risk of the women who spent their childhood era in a rural area is nearly 20 percent higher than the women who spent their childhood in an urban area. This effect declines only to 8 percent when we additionally control for socioeconomic and socio-cultural characteristics of women in the last model. Similarly, those women whose mother was not able to read and write have nearly 30 percent higher transition risk relative to reference category. In the last model of our analysis, this effect declines to 12 percent, meaning that is still substantial. The patterns for fourth birth risks with respect to the respondent's number of siblings show that the women from larger families more likely to have a fourth child.

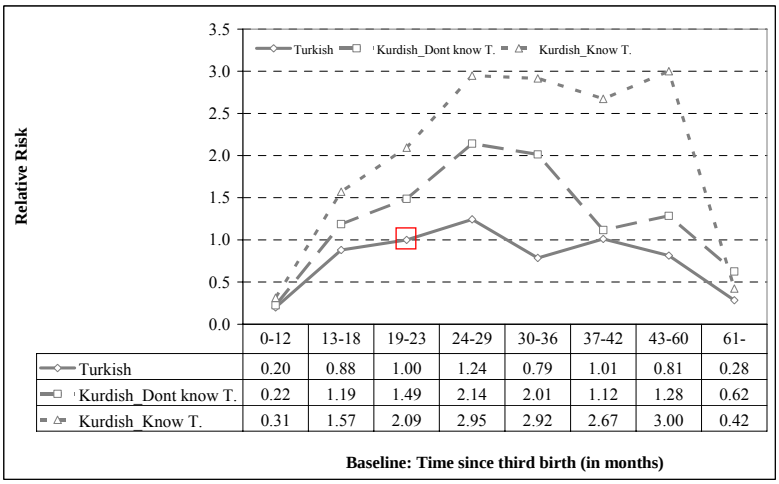
Model 4 extends Model 3 with socioeconomic control variables; *educational attainment of women, working status before the marriage and husband's education*. Women's education seems to play a key role in impacting the propensity of giving a fourth birth. The women with no education/Primary incomplete degree have more than 2 times higher risk relative to the women with secondary and higher level

educational degree. As we have seen in previous parity orders, the women, who progress to higher birth orders, are usually the ones less likely to be employed (especially with social security) before their marriage. The result of our analysis shows that premarital working experience loose its importance on birth intensity of women after the transition to parity three. Husband's education on the hand is still found to have some influence on the propensity of giving birth to the fourth child. Differently than by the women's own educational attainment we don't observe a gradient in relationship by the husband's educational attainment; only secondary and higher educational attainment of a husband decreases fourth birth.

Model 5 extends Model 4 with socio-cultural control variables of the family-formation process; *marriage arrangement, bride's money, consanguinity and postnuptial residence.* For each of these covariates, the level related to more 'modernized' behavior is chosen as the reference category and has the lowest fourth birth risk. Women who herself made the marriage decision together with her husband, whose family did not receive bride's money, who does not have blood relationship with husband, and who began the marital union in a neo-local family had lower progression risks than women who married in a more customary manner. The three children mothers, who are under risk of experiencing a fourth birth, form a selected group by also virtue of high traditionalism in their marriages. Therefore among these women the effect of the cultural set of covariates in general is not very strong any more on transition to fourth birth.

I have constructed several interaction models in Model 5, to examine whether the main control variables of the calendar period and mother tongue groups, and other covariates under study, affect the progression to fourth birth interactively. The first interaction variable fitted between the baseline duration and mother tongue of women (see, Figure IX.4.b.1).

Figure IX.4.b.1. Relative risk of fourth birth, by time since third birth and mother tongue. Risk relative to duration '19-23' and 'Turkish' speaking categories



	0-12	13-18	19-23	24-29	30-36	37-42	43-60	61-
Turkish	0.20	0.88	1.00	1.24	0.79	1.01	0.81	0.28
Kurdish_Dont know T.	0.22	1.19	1.49	2.14	2.01	1.12	1.28	0.62
Kurdish_Know T.	0.31	1.57	2.09	2.95	2.92	2.67	3.00	0.42

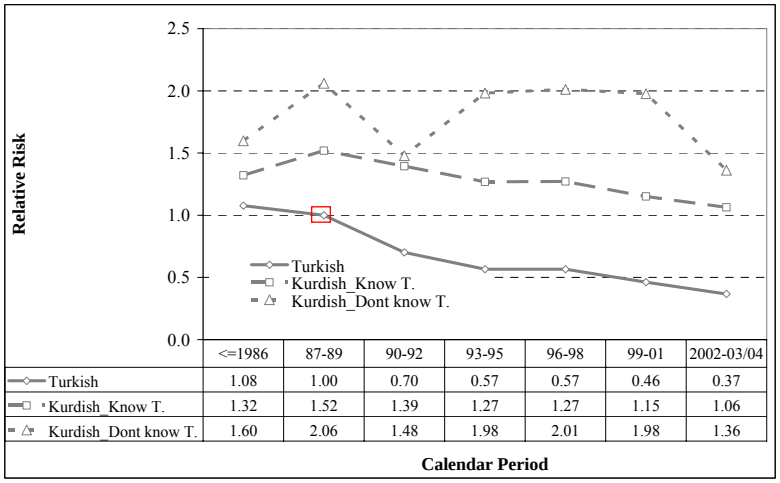
Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.4.b.1. P values of the covariate levels and test results of the model are given separately in Appendix D.

The tempo of fourth birth transition differs by the mother tongue of women. The Turkish speaking women's propensity of giving a third birth gradually increases and reaches its highest level in 24 and 29 month after the third birth. Thereafter, the propensity slowly declines; the third birth risk at '61-'months duration level is nearly 30 percent of the reference category (19-23 month after the second birth). The tempo of the Kurdish speaking women, who knows Turkish, in general, is similar to that of Turkish speaking women. Women from these two groups have most often gives a fourth birth 2.5-3 years after their third births and progression is less likely after this duration level.

The fourth birth intensity of the Kurdish speaking group, who don't know Turkish, rapidly increases after the third birth. The propensity of giving a fourth birth remains at highest level between 2 and 5 years after the third birth meaning that eventually most of these women progress fourth birth order.

In order to examine the fourth birth developments over calendar time by the mother tongue of women, another interaction variable constructed in Model 5 (see, Figure IX.4.b.2). The change in the relative risks of fourth births over calendar period presents differential trends by the mother tongue of women. The propensity of giving a fourth birth of the Turkish mother shows a sharp decline until the mid 1990. Thereafter the decline is still continual, but it is relatively smother than before. Overall, compare to reference category (1987-1989), the fourth birth risk is 63 percent lesser in 2002-2003/04 period level.

Figure IX.4.b.2. Relative risk of fourth birth, by calendar period and mother tongue. Risk relative to calendar period '1987-89' and 'Turkish' speaking category



	<=1986	87-89	90-92	93-95	96-98	99-01	2002-03/04
Turkish	1.08	1.00	0.70	0.57	0.57	0.46	0.37
Kurdish_Know T.	1.32	1.52	1.39	1.27	1.27	1.15	1.06
Kurdish_Dont know T.	1.60	2.06	1.48	1.98	2.01	1.98	1.36

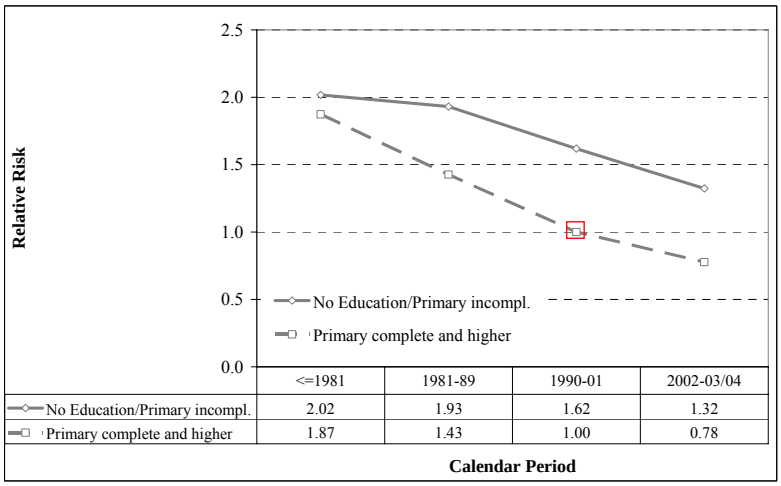
Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.4.b.1. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 7 levels. P values of the covariate levels and test results of the model are given separately in Appendix D.

The fourth birth developments of the two groups of Kurdish speaking women show different trends over the calendar period. The propensity of having a fourth birth of the Kurdish speaking, who don't know Turkish, mothers -apart from the short term decline in 1990-1992 period level- remains stable until the end of 1990s. On the other hand, the fourth birth development of the Kurdish speaking, who know

Turkish, group over calendar time shows a continual decline since the beginning of 1990s. In the last period level, their fourth birth risk declines to similar level that of Turkish speaking mother's in 1987-1989 period level.

An interaction variable between calendar period and education of women could reveal the fourth birth developments in conjunction with macro economic changes of the last two decades (see, Figure IX.4.b.3). With this interaction variable, we expect to see how the change in the fourth birth risks has been picked up by different socioeconomic groups in Turkey.

Figure IX.4.b.3. Relative risk of fourth birth, by calendar period and education. Risk relative to calendar period '1990-2001' and 'Primary complete and higher' categories



	<=1981	1981-89	1990-01	2002-03/04
No Education/Primary incompl.	2.02	1.93	1.62	1.32
Primary complete and higher	1.87	1.43	1.00	0.78

Note: The interaction is controlled for all the other factors presented in Model 5 in Table 8. In order to obtain more robust estimates 9 levels of the calendar period variable are collapsed into 4 levels. P values of the covariate levels and test results of the model are given separately in Appendix D.

We have divided calendar period variable into four broad categories so as to simplify interpretation. The first category; '1981 and before', represents the effect of period when statist economic development policies implemented. The second category; '1981 to 1990' stands for the effect of first era of neo-liberal economic policies. This period characterized by a relatively stable economic growth. The 1990s

shows the effect of second era of neo-liberal economic policies which in general were characterized by severe macroeconomic instability in Turkey. Thus the third category; '1990 to 2001' stands for the effect of these volatile economic growth years. In the last period category; '2002-2003/04', represents the effect of recovering high macro economic growth rate. Also, due to smaller sample size of three children 'secondary complete and higher' educated women, the 'Primary complete' and 'Secondary complete and higher' education levels are collapsed into one single category as 'Primary complete and higher'

Figure IX.4.b.3 shows that the fourth birth intensities of the 'Primary complete and higher' educated women have been in a decline since the beginning of 1980s in Turkey. On the other hand, the decline process begins for the 'No education/Primary incomplete' level educated women in 1990-2001 period level which corresponds volatile economic growth era.

We want to examine the fourth birth trends by socioeconomic groups and mother tongue groups as well. For this reason, another interaction variable including calendar period, mother tongue and education is constructed (see, Table IX.4.b.2). The categories of the covariates are reorganized so as to obtain more robust estimates: 1) mother tongue variable collapsed in two groups; Turkish and Kurdish speaking women, 2) because high educational attainment is rare among the Kurdish speaking women, 'primary complete' (middle) and 'secondary complete and higher' (high) education levels are collapsed into one single category for them. The all Kurdish speaking, who don't know Turkish, women are represented in no education/ Primary incomplete (low) category, together with more than half of (60 percent) the Kurdish speaking, who know Turkish, women, and 3) 9 levels of the calendar period variable are collapsed into 2 major levels.

The findings in the Table IX.4.b.2 show that the fourth birth intensity has declined the fastest for the low and middle level educated Turkish speaking groups. The trend of the Kurdish speaking women, with 'middle or high' level education, presents a significant decline too, though their risk level is higher than the low educated Turkish speaking women in the two period levels. The trend of the low

level educated Kurdish speaking women differently than all other groups show not decline at all yet.

Table IX.4.b.2. Relative risk of fourth birth, by time calendar period (before and after 1990), mother tongue and educational attainment. Risk relative to calendar period '1990 and after' and 'Turkish_High' categories

	T_Low	T_Medium	T_High	K_Low	K_M+H
Before 1990	2.37	1.74	1.22	3.38	2.62
1990 and after	1.50	1.15	***1***	3.44	1.81
Percent decline	-36.8	-33.9	-18.3	+1.8	-30.0

Note: The interaction is controlled for all the other factors presented in Model 5 in Table IX.4.b.1. T_Low: Turkish speaking and No education/Primary incomplete, T_Medium: Turkish speaking and Primary complete, T_High: Turkish speaking and Secondary complete and higher, K_Low: Kurdish speaking and No education/Primary incomplete, K_M+H: Kurdish speaking and Primary complete and Secondary complete and higher. Percent decline is estimated as the following: [((1990-)/(-1989))-1]*100. P values of the covariate levels and test results of the model are given separately in Appendix D.

The analysis of the progression to fourth birth in general confirms our conclusion that we stated for transition to third birth; the segments of the population that have been more integrated into modernization trends are also characterized by a stronger preference towards smaller family size. The Kurdish speaking women, when they have at least primary complete level education and when they speak Turkish as a second language do follow a similar path to that of Turkish speaking women though with a slower pace. By contrast, the Kurdish speaking women, who don't know Turkish, or without schooling (or less than primary complete) can be seen the slowest-movers in the fertility transition.

X. CONCLUSION

Turkey's modernization, socioeconomic development and accompanying social change, came into a new phase with the 1980s. These various macro societal changes have exerted impacts on fertility behavior. In this way, fertility has maintained its decline throughout the 1980s and 1990s. The trends in urban and regional fertility indicate that some parts of the population are already experiencing below replacement fertility in Turkey. However there is no uniformity in societal change and fertility decline over the country. Especially, the disparities between the Turkish and Kurdish speaking women are nowadays the central theme in demographic and other social-science literature.

This study has aimed to describe and analyze the trends and components in the recent fertility decline of Turkey with a special emphasis on differentials in patterns by the main mother tongue groups. The aim of this study is to identify different groups in the fertility decline process: the pioneers and the laggards in low-fertility behavior.

The fertility decline process and differentials has been examined from a birth order perspective. In this way, the study investigated various dimensions of the childbearing patterns in Turkey. The analysis has focused upon three major issues. First, the study has displayed changes over calendar time in the intensities of progression to another birth from the 1980s onwards. Second, the analysis has illustrated the trends by the main mother tongue groups and different socioeconomic groups. Third, the nature of interrelationships between demographic, socioeconomic and cultural characteristics of women and their childbearing behavior are examined.

The empirical part of the study is based up to date approaches and methods of causal analysis. In order to illustrate and elaborate the trends and differences in fertility dynamics we have exploited the rich body of information provided by the latest Turkey Demographic and Health Survey-2003 (TDHS-2003).

X.1. A SUMMARY OF THE FERTILITY DEVELOPMENTS FROM THE 1980S ONWARDS

Fertility developments over the last two decades by mother tongue groups have been the primary focus of this thesis. Therefore the study has examined the entry into motherhood as well as the progression to second and higher order births. Some fertility events appear to develop along same lines and to be affected by the same societal forces and individual characteristics of women. Others seem to be of particular character.

X.1.a. Trends in parity progressions over calendar time

The first objective of this thesis was to examine the trends of first, second, third and fourth birth transitions over time and how the trends have been picked up by the main mother tongue groups and different socioeconomic groups in Turkey. Considering the post 1980 economic development of the country, our examinations have focused upon two broad decades: 1981-1989 and 1990-2001. The first period was characterized by a relatively stable economic growth with implementation of neo-liberal economic policies. In the second era, Turkey's macro economy experienced highly volatile growth due to 4 major economic recessions; in 1991, 1994, 1999 and 2001.

We assumed that the life chances and socioeconomic living conditions of women are closely associated with their educational and employment characteristics. Therefore, we regard the changing fertility behavior over time of different educational groups as represent the trends of different socioeconomic groups.

General trends in parity progressions over time

Two hazard regression models have been constructed to estimate change in first birth intensities over time. In the first model, the dependent variable was the time since a woman turns 14. The estimation has shown; a decline during the first half of the 1980s; no change between the 1984 and 1992; from and the mid 1990s onwards, another continual decline. This suggests that age at first birth did not change much during the stable economic growth era, while it has increased more during more volatile economic growth years.

The second model has estimated the first birth intensities according to the time since first marriage. The results did not show any significant change until the mid 1990s. Since then, there has been an increase in the duration between first marriage and first time motherhood, but only for women at higher socioeconomic groups.

The hazard regression model which estimated the second birth risk over time has shown an ongoing decline from the beginning of 1980s to the end of study period. The trend of third birth intensities over calendar time has shown an ongoing risk decline over the two last decades too. The pace of decline is seen to be faster during periods of stable economic growth (through the 1980s and in 2002-2003/04) than in periods of volatile growth. The analysis has also shown a notable declining trend in progression to fourth births from the 1980s onwards except for the period between 1993 and 1998.

Trends in parity progressions over time by the main language groups

Propensity of entry into first time motherhood of all mother tongue groups have shown notable decline since the second half of the 1980s. The first birth trends of the Turkish and Kurdish women, who know Turkish, shows only gradual decline in the first half of 1990s yet the decline regains momentum from the mid 1990s

onwards. The Kurdish speaking who don't know Turkish women's shows the most persistent decline over the two decades.

The Turkish speaking mother's propensity of giving a second birth shows a steady decline since the 1980s. The decline of Kurdish speaking women's second birth risk is interrupted by a notable increase in the first half of 1990s, followed by a rapid decline in the second half of 1990s.

The propensity of giving a third birth of Turkish speaking mothers shows a continual and sharp decline until the end of the 1980s. The trend become smoother during 1990s but it is still steady. The trend of Kurdish speaking women, who knows Turkish, is very similar, though birth propensities are at a higher level. The trend of the Kurdish speaking women, who don't know Turkish, is very different. It shows no decline until 1990-1992. Thereafter, the third birth risks of the Kurdish speaking, who don't know Turkish, mothers show a significant increase during 1993-1998 when the intensive displacement and armed conflict took place in the East region.

The propensity of giving a fourth birth of the Turkish mother shows a sharp decline until the mid 1990 and a relatively smoother decrease since then. The fourth birth development of the Kurdish speaking, who knows Turkish, group over calendar time shows a continual decline since the beginning of 1990s. On the other hand, the fourth birth risks of the Kurdish speaking mothers, who don't know Turkish, in general remains stable until the end of 1990s.

Trends in parity progressions over time by the educational groups

We have investigated the first birth developments of the 'illiterate' and 'literate' women over time. The directions in first birth trends of the two groups of women are highly similar though the first births risks of the 'illiterate' women have declined faster over the last two decades. The persistent risk decline of the 'illiterate'

women over time suggest that rising age at first birth, seemingly as a result of increasing age at marriage, has been a behavioral change spreading among all segments of the society.

The analysis has shown that the first birth interval of the highest educated women began to prolong in the second half of 1980s with expanding economic developments. The duration from first marriage to first birth of the middle and low educated women has shown a general stability despite the macro level economic and social changes of the two decades.

Among the educational groups; second birth risk of the 'secondary complete and higher' educated women shows notable decline throughout 1980s and 1990s. The intensity of the women with 'No education/Primary incomplete' and 'Primary complete' educational attainment do not present significant change during 1980s. Their second birth intervals especially that of 'Primary complete' educated women's began to extend during the end of the study period only.

The third birth intensities of the two-child 'secondary complete and higher' educated women show a considerable decline in 1990-2001. The volatile economic growth era seems to have brought about the strongest limiting behavior for them. Similarly, the decline process of 'No education/Primary incomplete' level educated women seen to be initiated in the same era. The decline process of the other educational groups of women already began during the 1980s.

The fourth birth intensities of the 'Primary complete or higher' educated women show a continual and rapid decline since the beginning of 1980s. On the other hand, the decline process for the 'No education/Primary incomplete' educated women begins only in 1990-2001 period level.

Trends in parity progressions over time by the mother tongue and educational groups

The estimation of transition risks by the mother tongue of women and their educational characteristics over time shows that: 1) the continuous decline in second birth risks of the Turkish speaking group seem to be driven by all educational categories of this group, 2) there is a constant and sharp decline of Kurdish women with 'middle or high' level education over the last two decades and 3) constant decline for the low educated Kurdish women since the second half of the 1990s.

The analysis of third birth trends shows the fastest decline for high educated Turkish speaking women. The trend of the low and middle educated Turkish speaking mothers presents a significant decline too. However, the change in the Kurdish speaking group's behavior is slower compare to Turkish speaking counterparts.

Comparing the fourth birth intensities in 'before' and 'after' 1990 we have found that the intensity has declined the fastest for the low and middle level educated Turkish speaking groups and 'middle or high' level educated Kurdish speaking women. The trend of the low level educated Kurdish speaking women does not show any significant decline.

X.1.b. The effects of women's characteristics on parity progressions

The second major objective of this thesis was to examine to what extent the parity transitions of the main mother tongue groups differ and how the variations are conditioned by individual level characteristics of women. The multivariate examination carried out with similar stepwise model construction for each parity order.

The estimation of the first birth risks by the age of women presented that; the Turkish speaking women have their first birth the latest among the mother tongue groups. The Kurdish speaking group, who know Turkish, give their first births at later ages than their 'don't know Turkish' counterparts. This pattern seems to be highly correlated with their differential age at marriages, rather than due to differential waiting time for childbearing after marriage.

In Turkey, most of the women intend to have two children and in general they reach this parity at the end of their reproductive life. Therefore, variation in second birth risks can be interpreted as differential spacing behavior; that is (lower) higher second birth risks corresponds to (longer) shorter second birth intervals. In contrast with the first births, the Turkish and Kurdish speaking women's childbearing patterns begin to diverse at progression to second birth. The two Kurdish speaking groups' waiting time for the second birth after the first one is much shorter than that of the Turkish speaking women.

The low propensity of giving birth to a high-order child (third and fourth) can be seen an indicator of modern fertility behavior. Thus, variation in births risks in transition to high-order parities can be interpreted as differential limiting of childbearing. In transition to third and fourth order births; the highest risk was observed for the Kurdish speaking women, who don't know Turkish and the lowest risk was observed for the Turkish speaking women.

The study has investigated the influences of four dimensions of the respondents on their parity transitions. We used firstly a set of demographic control variables: *age at previous birth (first marriage), survival status of the previous children and sex of previous children,* so as to measure impact of demographic factors on the transition risks. The risk of having first birth with respect to age at marriage showed an inverted U-shape relationship. The later age at previous birth has a strong negative effect on the subsequent parity transitions. We found strong replacement effect due to loss of a child; mortality of the previous child (ren) fosters parity transitions. Also a desire to have mixed gender composition of children and a son preference play notable role in transition to high-order births.

Secondly, we investigated the influence of childhood period characteristics; *childhood place of residence, respondent's mother's literacy* and *number of siblings* on the transition risks. The first two variables did not show any influence on progression to first birth. Urban type of place of residence during childhood and literacy of the respondent's mother are the factors reducing birth risks at all other parity orders. We found evidence of intergenerational transmission of fertility behavior; women from larger families tend to have more children.

Thirdly, the influence of socioeconomic dimension on the progression risks was investigated with socioeconomic variables; *educational attainment of women, working status before the marriage and husband's education*. We found a weak reversed U- type of relationship between the educational attainment and first birth risks. On the other hand, there is a strong negative relationship between a woman's education and transition risks in all other parity orders; especially in transition to third and fourth births. The premarital work experience of women, especially with social security, has a negative effect on the birth risks at transition to second and third births. Husband's educational attainment, in contrast to wife's education, shows a positive effect on first birth risks, no influence on second birth risks and negative influence on third and fourth birth risks.

Fourthly, we have examined the impact of socio-cultural dimensions on the parity progression risks. In this regard, the linkages between various social aspects of marital unions; *marriage arrangement, existence of bride's money, consanguinity, and type of postnuptial residence* and subsequent fertility behavior are taken into account. Marriage characteristics related to the degree of traditionalism or modernity in family lifestyles has an influence on fertility.

The analysis has shown that first birth risks almost do not differ by the social aspects of marital unions. However, the traditional characteristics of unions are fostering the progression to second and high-order births. The effects were most visible on the progression to a third birth.

X.2. ON THEORETICAL EXPLANATIONS OF THE FERTILITY TRANSITION IN TURKEY

Demographic transition theory and economic theories of fertility decline give prominence to role of the economic and social transformation of the social context in explanatining of fertility transition. They suggest that the changing relationship between the cost and benefits of having children is the main driving force to fertility change. We have found partial evidence supporting this explanatory perspective in our examination. Control of compositional changes over socioeconomic characteristics of women explained only a fraction of the decline in birth risks from the 1980s onwards. The remaining part appears to be attributed to non-socioeconomic factors. The additional variables, reflecting the socio-cultural traits of marriages, further contributed to explaining the fertility trends. Therefore, it is fruitful to consider a wider spectrum of factors, also including cultural dimensions, when examining the fertility decline in Turkey and other countries.

However, although the socioeconomic and cultural dimensions are necessary to explain the differential fertility behavior of the Turkish and Kurdish speaking women they are not sufficient. In the final models, a notable fraction in differential transition rates of the mother tongue groups remain unexplained. Therefore, both the decline over time and the differential fertility patterns appear to be driven by factors beyond those controlled for in the models.

We argue, in the line with the diffusion approach in demographic theory that the fertility transition in Turkey can be attributed to both structural changes in society and a diffusion process of modern parity-specific fertility limitation, via the Turkish language.

In Turkey, there have been clear discrepancies between the Turkish and Kurdish speaking population in regards to their integration into the general socioeconomic and cultural modernization process. The roots of uneven integration (or even isolation) of the Kurdish speaking population can be seen in the historical nation building process, and the socioeconomic and political developments of

Turkey. Fertility in Turkey and in the poorest East and Southeast began to decline first among the Turkish speaking population. The mother tongue advantage provided them with faster integration into the general socioeconomic modernization. Moreover, the spread of information and values about fertility regulation (new aspirations about childbearing, knowledge of modern fertility contraception, adaptation of Western cultural attributes etc.) which can be seen as a 'lubricant' of the fertility transition process, occurred more rapidly among the Turkish speaking population. Similarly, examination of the fertility developments shows that among the Kurdish speaking population those who are able to speak Turkish have been the first to change their fertility behavior. Relative to their counterparts who 'don't know Turkish', integration into the transition processes is quicker, perhaps due to better access to social interaction channels.

Therefore, the study shows that besides the socioeconomic and cultural differences, the way the distribution channels of social interaction and communication are constructed may explain a large fraction of the observed differences in fertility levels in Turkey.

The findings of this study partially support the minority status hypothesis as well. The Kurdish speaking women's birth intensities remained higher than their Turkish speaking counterparts even after controlling for individual level demographic, socioeconomic and cultural characteristics. This shows that membership in a linguistic minority group in Turkey has an independent effect on the fertility behavior of individuals.

Membership status does not affect all group members identically; rather the effect is dependent upon the degree of integration into the larger society. Socioeconomic and cultural characteristics of the Kurdish speaking women are much more likely to change when Turkish is learned. This may partly be explained by a acculturation of middle class identity in urban areas. The ability to speak Turkish, facilitating integration into the economic and social system, may raise expectations about further socioeconomic achievements. The study has shown a notable lower progression risk of a transition to higher order parities for Kurdish speaking women

who know Turkish, in comparison to their ‘don’t know Turkish’ counterparts. Thus, linguistic and social adaptation seems to nurture the two child norm.

The study shows that even the primary or higher-educated Kurdish speaking women’s fertility is higher than Turkish speaking women with a lower level or no education. This finding does not support the arguments of the minority status hypothesis which argues that at higher socioeconomic strata the minority group should have lower fertility than the majority members.

The time lag of the Kurdish speaking group’s onset of fertility transition in Turkey can partially explain this difference. Moreover, as the empirical findings of other studies have shown, the nature of the relationship between education and fertility depends on the institutional structure of society. The Kurdish speaking women’s social setting, in general, is characterized by slower socioeconomic development, less employment opportunities for women, and stronger traditionalism (gender inequality) compared to their Turkish speaking counterparts. This might be further factors explaining the weaker negative impact of Kurdish women’s education on parity progressions as compared to the Turkish speaking group.

X.3. DISCUSSIONS ON FUTURE FERTILITY DEVELOPMENTS IN TURKEY

The trends in fertility rates, by the mother tongue and socioeconomic groups, in Turkey single out 3 main groups in the contemporary fertility decline. The first group is composed of the ‘secondary complete or higher’ level educated Turkish speaking women who have been leading the changing fertility behavior since the onset of decline. Apart from their high educational attainment, participation in the labor force is a potent driving force of their changing fertility behavior. Today, the high educated Turkish speaking women’s social institutional context of reproduction shows certain similarities with the developed countries of southern Mediterranean Europe where fertility is at very low level (total fertility 1.5 and below). Behind these

similarities lies rapid modernization within context of ‘familistic’ social structure and family-oriented value systems. Certain common features can be mentioned as: late home leaving; rare premarital cohabitation and out-of-wedlock fertility; late but nearly universal marriage; slower change towards gender equity in familial institutions compared to advancements in education and market employment; high intensity of material and non-material exchange with the parental generation and other relatives; the lack of support to combine paid employment and childrearing; family centered welfare state policies, giving preeminence to male-bread winner model etc.

The emerging fertility pattern of the high educated Turkish speaking women nowadays is characterized by low level of childlessness, yet postponement of motherhood and small family size. Stopping childbearing after the first child is seen to be an emerging behavior. Accordingly, in parallel to increasing employment opportunities, we can expect these women to be pioneers in very low fertility behavior in Turkey.

The second group is composed of ‘primary complete and less’ level educated Turkish and Kurdish speaking women. In spite of the generalized spread of nuclear families, the institutional setting that reproduction takes place for this group of women is still dominated by the male breadwinner-female housekeeper model with gender inequalities. Low level of education is major obstacle for these women to participate in the labor force or being gainfully employed in the market in an urban environment. These attributes can be seen as obstacles for their further more fertility decline. However, we should consider the societal impact of changing socioeconomic circumstances for this group. The transformation towards a consumption society in the last two decades has declined the demand for (additional) children substantially. Also, the macro level societal changes seem to change power relations within marriage towards more egalitarian setting.

The typical fertility pattern of this group from the 1980s onwards has been the steep decline in third and fourth birth propensities. We can see their current fertility decline process as continuous spread of the two-child family norm. The national fertility level has already dropped below replacement level in Turkey at the

beginning of 2000s. Therefore, the future course of economic and social developments may ensue for this group further leveling off towards low fertility (total fertility 1.6-2.1).

The ‘primary complete’ level educated Turkish speaking women constitute the ‘trendsetters’ within this group. The Kurdish speaking women’s, who know Turkish, fertility level is still high but they are following the footsteps of the Turkish speaking women. With a relatively higher level of socioeconomic development and more egalitarian gender relationships, the fertility of the educated Kurdish speaking group may decline more rapidly in future.

The third group largely consists of the Kurdish speaking women, who don’t know Turkish. This group constitutes laggards in fertility transition regarding their differential fertility developments over time. The institutional setting within which reproduction takes place for this group of women began to change the latest. This setting nowadays is characterized by the lowest socioeconomic development in Turkey. In these families, children may still be considered as a source of additional income and old age security. In other words, the monetary and psychological cost of having children may not yet exceeded the expected utilities. Also the cultural dimension of the institutional setting is still dominated by strong patriarchal relationships. The armed conflict in the Eastern region of the country and rapid migration trend towards the West and South regions and urban areas during this period was the major societal change for this group. Our empirical analyses have not shown a definitive evidence that their progression rates to third and fourth birth orders has declined during this period. We found tentative evidence that their transition from large to small families initiated at end of 1990s. Therefore, we may expect to find for this group in the near future further evidence of adaptation of parity specific fertility control.

X.5. FUTURE RESEARCH PERSPECTIVES

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 soon 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 families. The present study shows that even the most resistant group to fertility decline showed the beginnings of a decrease in higher-order birth risks in the late 1990s. This implies that we can expect further declines in aggregate Turkish fertility also in the near future to come.

The emerging fertility patterns in Turkey seem quite similar to a typical low-fertility pattern of a developed country setting. 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. Fertility differentials and decline process have usually been elaborated with perspectives giving preeminence to the socioeconomic development and cultural change dimensions. Our research implies that incorporation of social interaction component and diffusion models in explanatory frameworks will further improve the understanding of fertility and family behavior.

Moreover, beside the individual level analysis, a multilevel approach, allowing the simultaneous inclusion of both micro (individual level) and the macro (contextual level) factors could lead to a better understanding of fertility determinants. The cross-sectional nature of much of the present demographic data hampers such an extension. Even though TDHS-2003 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. A more articulate life course perspective in survey design and data collection will definitely enhance analysis of demographic and other relevant processes in Turkey.

Also, besides individual characteristics of women, incorporation of husband's attributes into the analysis can allow to gain much better insights into the specificities of the childbearing behavior. For example, in the context of Turkey husband's employment histories can provide better insight to understand economic dimension of the fertility behavior.

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APPENDIX A

ANALYSIS OF PROGRESSION TO FIRST BIRTH: P- VALUES AND TEST RESULTS OF EVENT HISTORY MODELS

Figure X.1.a.2. P- values and test results

	Turkish	Kurdish_K.T	Kurdish_D.K.T
14-16	0.000	0.000	0.000
17-19	0.000	0.001	0.361
20-22		0.103	0.270
23-26	0.000	0.807	0.216
27-	0.000	0.000	-

Log pseudolikelihood =-9870.5764
Wald chi2(26) = 3658.46

Figure X.1.a.3. P- values and test results

	Illiterate	Literate
<1981	0.000	0.005
1981-83	0.000	0.012
1984-86	0.355	0.732
1987-89	0.194	
1990-92	0.063	0.483
1993-95	0.921	0.014
1996-98	0.029	0.000
1999+	0.000	0.000

Log pseudolikelihood = -9873.6797
Wald chi2(24) = 2772.81

Figure X.1.a. 4. P- values and test results

	Turkish	Kurdish_K.T	Kurdish_D.K.T
<=1983	0.000	0.000	0.000
1984-89		0.013	0.000
1990-95	0.125	0.038	0.019
1996-2003/04	0.000	0.000	0.651

Log pseudolikelihood =-9903.6059
Wald chi2(18) = 2723.06

Table X.1.c.1. P- values and test results

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
1. ***Duration (in months) (Time-varying)***					
0-9	0.000	0.000	0.000	0.000	0.000
10-12					
13-15	0.000	0.000	0.000	0.000	0.000
16-18	0.000	0.000	0.000	0.000	0.000
19-23	0.000	0.000	0.000	0.000	0.000
24-29	0.000	0.000	0.000	0.000	0.000
30-36	0.000	0.000	0.000	0.000	0.000
37-42	0.000	0.000	0.000	0.000	0.000
43-60	0.000	0.000	0.000	0.000	0.000
61-	0.000	0.000	0.000	0.000	0.000
2. ***Calendar Period (Time-varying)***					
<1981	0.001	0.005	0.003	0.020	0.016
1981-83	0.863	0.839	0.793	0.888	0.843
1984-86	0.433	0.390	0.337	0.357	0.325
1987-89					
1990-92	0.861	0.814	0.802	0.916	0.895
1993-95	0.295	0.315	0.379	0.312	0.301
1996-98	0.075	0.072	0.093	0.074	0.077
1999-01	0.026	0.022	0.041	0.039	0.049
2002-03/04	0.058	0.061	0.122	0.138	0.163
3. ***Mother Tongue***					
Turkish					
Kurdish_Know T.	0.164	0.459	0.100	0.597	0.804
Kurdish_Don't K.T.	0.001	0.008	0.001	0.418	0.678
Demographic Cont. Var.:					
4. ***Age at Marriage***					
≤17		0.475	0.534	0.452	0.459
18-20		0.000	0.000	0.004	0.004
21-23		0.001	0.001	0.004	0.004
24≥					
Childhood era Cont. Var.:					
5. ***Childhood Place of Residence***					
Urban					
Rural			0.806	0.577	0.546
6. ***Respondent's Mother's Literacy***					
Yes					
No			0.901	0.906	0.931
7. ***Number of Siblings***					
1-4					
5-6			0.098	0.296	0.333
7+			0.001	0.004	0.004

Table X.1.c.1. continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Cont. Var.:					
8. *Education*					
No education/ Primary incomplete				0.659	0.790
Primary complete				0.008	0.021
Secondary complete and higher					
9. *Working Status Before Marriage*					
Not worked				0.001	0.003
Worked without social security				0.067	0.113
Worked with social security					
10. *Husband's Education*					
No education/ Primary incomplete				0.001	0.001
Primary complete				0.163	0.119
Secondary complete and higher					
Socio-cultural Cont. Var.:					
11. *Marriage Arrangement*					
By the couple					
By the families					0.143
Escaped/Abducted					0.674
12. *Brides Money*					
No					
Yes (in kind/cash)					0.453
Berdel arrangement					0.509
13. *Consanguinity*					
Not related					
First degree relative					0.056
Other relative					0.564
14. *Postnuptial Residence*					
Neo-local					
Patri-local					0.261
Log pseudolikelihood	-8365.6618	-8339.5355	-8329.69	-8300.1515	-8294.1965
Wald chi2(df)	2964.67 (20)	3014.34 (23)	3218.04 (29)	3242.23 (36)	6797.8 (45)

Source: Author's estimation based on TDHS-2003

Figure X.1.c.1. P- values and test results

	Turkish	Kurdish_K.T	Kurdish_D.K.T
<=1983	0.219	0.359	0.270
1984-89		0.707	0.784
1990-95	0.652	0.174	0.472
1996-01	0.053	0.064	0.435
2002-03/04	0.137	0.864	0.249

Log pseudolikelihood = -8301.1905
Wald chi2(47) = 7653.82

Figure X.1.c.2. P- values and test results

	Primary complete and less	Secondary complete and higher
<1981	0.195	0.493
1981-83	0.745	0.738
1984-86	0.409	0.784
1987-89	0.767	
1990-92	0.989	0.319
1993-95	0.835	0.011
1996-98	0.340	0.210
1999-01	0.295	0.165
2002=<	0.834	0.008

Log pseudolikelihood =-8286.0016
Wald chi2(52) = 5837.42

Figure X.1.c.3. P- values and test results

	Not worked/W.Wth. Soc. Sec.	Worked with social security
<1981	0.145	0.401
1981-83	0.640	0.162
1984-86	0.361	0.386
1987-89	0.534	
1990-92	0.660	0.478
1993-95	0.492	0.020
1996-98	0.244	0.053
1999-01	0.226	0.034
2002=<	0.407	0.016

Log pseudolikelihood = -8291.4567

Wald chi2(52) = 6048.76

APPENDIX B

ANALYSIS OF PROGRESSION TO SECOND BIRTH: P- VALUES AND TEST RESULTS OF EVENT HISTORY MODELS

Table X.2.b.1. P- values and test results

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
1. ***Duration (in months) (Time-varying)***					
0-9	0.000	0.000	0.000	0.000	0.000
10-12	0.000	0.000	0.000	0.000	0.000
13-15	0.011	0.012	0.010	0.009	0.008
16-18	0.302	0.302	0.281	0.271	0.264
19-23					
24-29	0.000	0.000	0.000	0.000	0.000
30-36	0.030	0.025	0.009	0.007	0.005
37-42	0.686	0.589	0.321	0.265	0.208
43-60	0.009	0.005	0.000	0.000	0.000
61-	0.002	0.008	0.058	0.088	0.121
2. ***Calendar Period (Time-varying)***					
<1981	0.000	0.000	0.000	0.000	0.000
1981-83	0.000	0.000	0.001	0.001	0.001
1984-86	0.008	0.012	0.021	0.021	0.023
1987-89					
1990-92	0.993	0.815	0.765	0.713	0.653
1993-95	0.002	0.005	0.013	0.019	0.036
1996-98	0.000	0.001	0.008	0.013	0.027
1999-01	0.000	0.000	0.000	0.000	0.000
2002-03/04	0.000	0.000	0.000	0.000	0.000
3. ***Mother Tongue***					
Turkish					
Kurdish_Know T.	0.000	0.000	0.000	0.000	0.000
Kurdish_Don't K.T.	0.000	0.000	0.000	0.000	0.001
Demographic Contrl. Var.:					
4. ***Age at First Birth***					
≤18		0.000	0.000	0.000	0.000
19-21		0.000	0.000	0.000	0.000
22-24		0.000	0.000	0.000	0.000
25≥					
5. Sex of Previous Child					
Male					
Female		0.001	0.002	0.002	0.002
Childhood era Control Var.:					
5. ***Childhood Place of Residence***					
Urban					
Rural			0.000	0.009	0.046

(Table X.2.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
6. *Respondent's Mother's Literacy*					
Yes					
No			0.000	0.002	0.008
7. *Number of Siblings*					
1-4					
5-6			0.000	0.000	0.000
7+			0.000	0.000	0.000
Socioeconomic Contr. Var.:					
8. *Education*					
No education/ Primary incomplete				0.000	0.000
Primary complete				0.000	0.000
Secondary complete and higher					
9. *Working Status Before Marriage*					
Not worked				0.000	0.001
Worked without social security				0.001	0.017
Worked with social security					
10. *Husband's Education*					
No education/ Primary incomplete				0.661	0.524
Primary complete				0.831	0.443
Secondary complete and higher					
Socio-cultural Contrl. Var.:					
11. *Marriage Arrangement*					
By the couple					
By the families					0.107
Escaped/Abducted					0.065
12. *Brides Money*					
No					
Yes (in kind/cash)					0.003
Berdel arrangement					0.560

(Table X.2.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
13. *Consanguinity*					
Not related					
First degree relative					0.154
Other relative					0.398
14. *Postnuptial Residence*					
Neo-local					
Patri-local					0.000
Log pseudolikelihood	-6348.8075	-6268.2265	-6118.84	-6069.7447	-6036.5052
Wald chi2(df)	1430.81 (20)	1485.66 (24)	1613.48 (30)	1711.94 (37)	1873.94 (46)

Source: Author's estimation based on TDHS-2003

Figure X.2.b.1. P- values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
0-12	0.000	0.000	0.000
13-18	0.200	0.007	0.541
19-23	0.000		0.041
24-29	0.003	0.000	0.000
30-36	0.012	0.000	0.000
37-42	0.237	0.001	0.081
43-60	0.000	0.000	0.300
61-	0.366	0.098	0.058

Log pseudolikelihood = -6424.0325
Wald chi2(56) = 2702.16

Figure X.2.b.2. P- values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
<=1986	0.001	0.000	0.007
1987-89		0.342	0.069
1990-92	0.772	0.005	0.000
1993-95	0.014	0.064	0.040
1996-98	0.025	0.148	0.474
1999-01	0.000	0.754	0.983
2002-03/04	0.000	0.693	0.342

Log pseudolikelihood = -6033.6336
Wald chi2(56) = 1663.01

Figure X.2.b.3. P- values and test results

	No Education/Primary incompl.	Primary complete	Secondary complete and higher
<=1981	0.000	0.000	0.028
1981-89	0.000	0.000	0.003
1990-01	0.000	0.000	0.000
2002-03/04	0.353	0.998	0.083

Log pseudolikelihood = -6094.41
Wald chi2(56) = 56446.17

Figure X.2.b.4. P- values and test results

	<=1983	1984-89	1990-95	1996-01	2002-03/04
T_L	0.001	0.062	0.052	0.798	0.252
T_M	0.001	0.043	0.742	0.625	0.015
T_H	0.386		0.098	0.026	0.002
K_L	0.000	0.001	0.000	0.002	0.207
K_M+H	0.059	0.010	0.041	0.259	0.330

Log pseudolikelihood =-6079.4593
Wald chi2(56) = 5864.97

APPENDIX C

ANALYSIS OF PROGRESSION TO THIRD BIRTH: P- VALUES AND TEST RESULTS OF EVENT HISTORY MODELS

Table X.3.b.1. P-values and test results

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
1. ***Duration (in months) (Time-varying)***					
0-9	0.000	0.000	0.000	0.000	0.000
10-12	0.000	0.000	0.000	0.000	0.000
13-15	0.017	0.011	0.009	0.008	0.007
16-18	0.006	0.004	0.004	0.004	0.003
19-23					
24-29	0.032	0.014	0.009	0.008	0.007
30-36	0.986	0.553	0.375	0.329	0.286
37-42	0.059	0.211	0.347	0.407	0.472
43-60	0.000	0.012	0.047	0.074	0.106
61-	0.000	0.000	0.000	0.000	0.000
2. ***Calendar Period (Time-varying)***					
<1981	0.000	0.000	0.000	0.001	0.002
1981-83	0.000	0.001	0.001	0.002	0.003
1984-86	0.003	0.019	0.023	0.025	0.030
1987-89					
1990-92	0.051	0.214	0.352	0.345	0.417
1993-95	0.001	0.053	0.096	0.102	0.143
1996-98	0.000	0.005	0.021	0.026	0.056
1999-01	0.000	0.000	0.001	0.002	0.005
2002-03/04	0.000	0.000	0.000	0.000	0.000
3. ***Mother Tongue***					
Turkish					
Kurdish_Know T.	0.000	0.000	0.000	0.000	0.000
Kurdish_Don't K.T.	0.000	0.000	0.000	0.000	0.000
Demographic Contrl. Var.:					
4. ***Age at Second Birth***					
≤22		0.000	0.000	0.000	0.000
23-25		0.000	0.000	0.000	0.000
26-29		0.000	0.000	0.000	0.000
30≥					
5. Sex of Previous Children					
Male-Male		0.011	0.012	0.010	0.010
Female-Female		0.000	0.000	0.000	0.000
Mix					
6. Survival status of the first child					
Alive at second birth					
Death at second birth		0.000	0.000	0.000	0.000

(Table X.3.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Childhood era Control Var.:					
6. *Childhood Place of Residence*					
Urban					
Rural			0.000	0.001	0.010
7. *Respondent's Mother's Literacy*					
Yes					
No			0.000	0.000	0.000
8. *Number of Siblings*					
1-4					
5-6			0.096	0.179	0.433
7+			0.000	0.000	0.000
Socioeconomic Contr. Var.:					
9. *Education*					
No education/ Primary incomplete				0.000	0.000
Primary complete				0.001	0.003
Secondary complete and higher					
10. *Working Status Before Marriage*					
Not worked				0.000	0.004
Worked without social security				0.002	0.020
Worked with social security					
11. *Husband's Education*					
No education/ Primary incomplete				0.000	0.001
Primary complete				0.001	0.010
Secondary complete and higher					
Socio-cultural Contrl. Var.:					
12. *Marriage Arrangement*					
By the couple					
By the families					0.099
Escaped/Abducted					0.536
13. *Brides Money*					
No					
Yes (in kind/cash)					0.000
Berdel arrangement					0.032

(Table X.3.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
14. *Consanguinity*					
Not related					
First degree relative					0.033
Other relative					0.172
15. *Postnuptial Residence*					
Neo-local					
Patri-local					0.001
Log pseudolikelihood	-5752.6957	-5411.5359	-5260.05	-5192.5422	-5155.4215
Wald chi2(df)	2487.83(20)	2831.19(27)	2950.16(33)	3282.19(40)	4053.72(49)

Source: Author's estimation based on TDHS-2003

Figure X.3.b.1. P-values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
0-12	0.000	0.000	0.000
13-18	0.091	0.944	0.265
19-23		0.003	0.006
24-29	0.048	0.000	0.000
30-36	0.469	0.000	0.000
37-42	0.346	0.073	0.000
43-60	0.262	0.469	0.001
61-	0.000	0.113	0.883

Log pseudolikelihood = -6424.0325
Wald chi2(56) = 2702.16

Figure X.3.b.2. P-values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
<=1986	0.001	0.000	0.007
1987-89		0.342	0.069
1990-92	0.772	0.005	0.000
1993-95	0.014	0.064	0.040
1996-98	0.025	0.148	0.474
1999-01	0.000	0.754	0.983
2002-03/04	0.000	0.693	0.342

Log pseudolikelihood = -5163.5853
Wald chi2(52) = 7764.76

Figure X.3.b.3. P-values and test results

	No Education/Primary incompl.	Primary complete	Secondary complete and higher
<=1981	0.000	0.000	0.215
1981-89	0.000	0.000	0.002
1990-01	0.000	0.000	
2002-03/04	0.029	0.087	0.993

Log pseudolikelihood = -5185.54
Wald chi2(48) = 5543.84

Table X.3.b.2. P-values and test results

	T_Low	T_Medium	T_High	K_Low	K_M+H
Before 1990	0.000	0.011	0.000	0.000	0.000
1990 and after	0.000	0.000		0.000	0.000
Percent decline					

Log pseudolikelihood = -5170.7269
Wald chi2(48) = 7785.42

APPENDIX D

ANALYSIS OF PROGRESSION TO FOURTH BIRTH: P- VALUES AND TEST RESULTS OF EVENT HISTORY MODELS

Table X.4.b.1. P- values and test results

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
1. ***Duration (in months) (Time-varying)***					
0-9	0.000	0.000	0.000	0.000	0.000
10-12	0.000	0.000	0.000	0.000	0.000
13-15	0.022	0.017	0.016	0.015	0.015
16-18	0.401	0.352	0.344	0.334	0.335
19-23					
24-29	0.015	0.011	0.009	0.007	0.006
30-36	0.360	0.458	0.549	0.619	0.657
37-42	0.570	0.709	0.836	0.935	0.996
43-60	0.009	0.025	0.054	0.084	0.107
61-	0.000	0.000	0.000	0.000	0.000
2. ***Calendar Period (Time-varying)***					
<1981	0.001	0.199	0.197	0.370	0.488
1981-83	0.101	0.911	0.956	0.583	0.545
1984-86	0.754	0.383	0.386	0.223	0.198
1987-89					
1990-92	0.001	0.007	0.009	0.010	0.011
1993-95	0.000	0.001	0.001	0.001	0.001
1996-98	0.000	0.001	0.001	0.001	0.001
1999-01	0.000	0.000	0.000	0.000	0.000
2002-03/04	0.000	0.000	0.000	0.000	0.000
3. ***Mother Tongue***					
Turkish					
Kurdish_Know T.	0.000	0.000	0.000	0.000	0.000
Kurdish_Don't K.T.	0.000	0.000	0.000	0.000	0.000
Demographic Contrl. Var.:					
4. ***Age at Third Birth***					
≤25		0.000	0.000	0.000	0.000
26-28		0.000	0.000	0.000	0.000
29-30		0.001	0.003	0.005	0.003
32≥					
5. Sex of Previous Children					
3 Males		0.051	0.040	0.054	0.047
3 Females		0.000	0.000	0.000	0.000
1 Male – 2 Female		0.000	0.000	0.000	0.000
2 Male – 1 Female					
6. Survival status of the previous children					
Alive at third birth					
Death at third birth		0.000	0.000	0.000	0.000

(Table X.4.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
Childhood era Control Var.:					
6. ***Childhood Place of Residence***					
Urban					
Rural			0.009	0.130	0.219
7. ***Respondent's Mother's Literacy***					
Yes			0.002	0.124	0.158
No					
8. ***Number of Siblings***					
1-4					
5-6			0.014	0.021	0.037
7+			0.000	0.000	0.000
Socioeconomic Contr. Var.:					
9. ***Education***					
No education/ Primary incomplete				0.005	0.007
Primary complete				0.099	0.122
Secondary complete and higher					
10. ***Working Status Before Marriage***					
Not worked				0.661	0.828
Worked without social security				0.991	0.849
Worked with social security					
11. ***Husband's Education***					
No education/ Primary incomplete				0.023	0.026
Primary complete				0.003	0.005
Secondary complete and higher					
Socio-cultural Contrl. Var.:					
12. ***Marriage Arrangement***					
By the couple					
By the families					0.771
Escaped/Abducted					0.033
13. ***Brides Money***					
No					
Yes (in kind/cash)					0.008
Berdel arrangement					0.003

(Table X.4.b.1 continued)

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
14. *Consanguinity*					
Not related					
First degree relative					0.272
Other relative					0.999
15. *Postnuptial Residence*					
Neo-local					
Patri-local					0.563
Log pseudolikelihood	-3362.985	-3194.505	-3142.65	-3106.2657	-3095.6463
Wald chi2(df)	1541.49(20)	1670.97(28)	1775.61(34)	1795.66(40)	3308.41(49)

Source: Author's estimation based on TDHS-2003

Figure X.4.b.1. P- values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
0-12	0.000	0.000	0.000
13-18	0.322	0.322	0.008
19-23		0.021	0.000
24-29	0.101	0.000	0.000
30-36	0.091	0.000	0.000
37-42	0.948	0.645	0.000
43-60	0.118	0.225	0.000
61-	0.000	0.020	0.235

Log pseudolikelihood = -3191.4604
Wald chi2(62) = 4547.92

Figure X.4.b.2. P- values and test results

	Turkish	Kurdish_Know T.	Kurdish_Don't know.T.
<=1986	0.484	0.056	0.003
1987-89		0.063	0.000
1990-92	0.006	0.083	0.083
1993-95	0.000	0.139	0.000
1996-98	0.000	0.140	0.000
1999-01	0.000	0.432	0.001
2002-03/04	0.000	0.731	0.243

Log pseudolikelihood = -3557.1354
Wald chi2(50) = 2200.83

Figure X.4.b.3. P- values and test results

	No Education/Primary incompl.	Primary complete and higher
<=1981	0.000	0.000
1981-89	0.000	0.000
1990-01	0.000	
2002-03/04	0.046	0.078

Log pseudolikelihood = -3114.1135
Wald chi2(44) = 2828.52

Table X.4.b.2. P- values and test results

	T_Low	T_Medium	T_High	K_Low	K_M+H
Before 1990	2.37	1.74	1.22	3.38	2.62
1990 and after	1.50	1.15	***1***	3.44	1.81

Log pseudolikelihood = -3109.4663
Wald chi2(47) = 4578.99