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RE-PLACING INDUCED ABORTION AND CONTRACEPTION: A SPECIAL FOCUS ON ETHNO-CULTURAL DIFFERENCES IN THE CASES OF TURKEY AND SELECTED CENTRAL ASIAN STATES

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ACCEPTANCE AND APPROVAL

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

Contraception and induced abortion have always persisted as the basic means of fertility regulation all through the modern history. Although both contraception and abortion are used for limiting or spacing fertility, individual, public and institutional attitude towards contraception and abortion is conflicting. In spite of the common acceptance of induced abortion as a reproductive right in most part of the world, the general intention is to decrease practice of abortion while increasing contraceptive use.

This dissertation aims a critical approach to the idea of replacement of abortion with contraception with a cross-cultural perspective. Turkey and three Central Asian State, Kazakhstan, Kyrgyzstan, and Uzbekistan are the selected countries for the discussion of the hypothesis of this study. In this dissertation relation between contraceptive use and abortion practice is discussed within the general view of reproductive behavior with a particular emphasis on control over fertility behavior. Abortion and contraception are not assumed to *replace* with each other but should be *re-placed* in overall understanding of fertility control.

Kazakhstan DHS 1999, Kyrgyzstan DHS 1997, Uzbekistan HES 2002, Turkey DHS 2003 are the primary data source for the analyses. Cross-cultural perspective is handled into two ways in this study; the first one is to examine fertility regulation concerning abortion and contraception for *different ethno-cultural groups within same country* and the second one is to examine *ethno-cultural variation for selected different countries*.

Considering the mother tongue, language used for communication, religion, and ethnicity three different groups are formed for studied countries. These groups are *(1) Kazaks, (2) Russian speaking Kazaks, (3) Russians* in Kazakhstan; *(1) Kyrgyz, (2) Russian speaking Kyrgyz, (3) Russians* in Kyrgyzstan; *(1) Uzbeks, (2) Russian speaking Uzbeks, (3) Russians* in Uzbekistan; and *(1) Turks, (2) Turkish speaking Kurds, (3) Kurds* in Turkey.

Analysis of this dissertation involves the following stages: Descriptive analysis, logistic regression analysis and structural equation modelling (causal modelling). While descriptive and logistic regression analyses cover the four countries

understudy, structural equation modelling (causal analysis) is generated for Turkey.

When summary indicators of abortion and contraception is determined in general country level, Turkey receives attention with its higher contraceptive use and lower abortion practice as compare to Central Asian countries. On the other hand when these crude results are furthered with other descriptive and logistic analyses for different sub-groups, it is seen that consumers of both contraception and abortion are among the same groups of women in all four countries. Considering the emphasis of this dissertation, Turks in Turkey and Russians in Central Asia appeared with their high level of contraceptive use and abortion practice. Differentiation among ethno-cultural groups is clearer for abortion practice. Turkish speaking Kurds and Russian speaking Central Asian are transitional groups regarding all analyses. Further analyses are employed in order to find out whether consumers of abortion and contraception are the same group of women or not. Results show that almost all women who experienced abortion also used modern contraception. Among women who ever practiced abortion, women who never used any contraception or modern contraception are very rare.

The parallel relation between abortion practice and contraceptive use is confirmed by logistic regression analysis of ever-use of abortion and current use of contraception. Results of logistic regression are evidence for statistically significant relations between ever-use of abortion and ever-use of contraception and current use of contraception and ever-use of abortion.

In the last stage, structural model of contraception and abortion is generated to examine these relations within a holistic perspective with a specific emphasis on ethno-cultural background for Turkey. Model involves variables “pregnancy intention”, “contraception before pregnancy” and “result of pregnancy (abortion/live birth)”, “number of living children”, and “education”. In the structural model with ethno-cultural background as moderator, it is seen that ethno-cultural variation affects contraception and abortion both directly and indirectly through “number of living children”, and “education”.

Then the validity of the same structural model for three ethno-cultural groups is tested by multiple group analysis. Results of the multiple group analysis show that the final model for general Turkey is also valid for Turks but invalid for Turkish speaking Kurds and Kurds. These results prove that the necessity of examining

relations between contraception and abortion within a holistic perspective of fertility regulation. Moreover these results show that their relation with other components of the fertility regulation mechanism significantly vary for different ethno-cultural groups in Turkey. In concordance with the assumption of this thesis, a unique fertility regulation model is not valid for different ethno-cultural groups.

ÖZET

Gebeliği önleyici yöntemler ve istemli düşük (kürtaj) insanlık tarihi boyunca iki temel üremeyi düzenleme aracı olarak yerlerini korumuşlardır. Bu iki yol doğurganlığa son verme ya da ara verme amacıyla kullanılsa da kişisel, kurumsal ve yasal düzenlemelerde bu yollara yönelik düşünceler farklılaşmaktadır. Kürtaj dünyanın önemli bir kısmında çoğuluğun kabul ettiği bir üreme hakkı olmasına rağmen, genel eğilim kürtaj uygulamalarını azaltmak ve yöntem kullanımını arttırmak şeklindedir.

Bu tez yöntem kullanımının kürtajın yerini alacağı düşüncesine kültürler arası bir bakışla eleştirel bir yaklaşım getirmeyi amaçlamaktadır. Türkiye ve üç Orta Asya ülkesi, Kazakistan, Kırgızistan ve Özbekistan, çalışmanın hipotezlerinin tartışılması için seçilmiş örnek ülkelerdir. Bu tezde gebeliği önleyici yöntem kullanımıyla kürtaj arasındaki ilişki, doğurganlık davranışı üzerindeki kontrol vurgusuyla, üreme davranışı bir bütünlük içinde ele alınarak değerlendirilmiştir. Bu nedenle kürtaj ve yöntem kullanımı *birbirinin yerine geçecek* araçlar olarak değil doğurganlık kontrolündeki *yerleri yeniden belirlenmesi gereken* araçlar olarak ele alınmıştır.

Temel veri kaynağı olarak Kazakistan Nüfus ve Sağlık Araştırması 1999, Kırgızistan Nüfus ve Sağlık Araştırması 1997, Özbekistan Sağlık Tarama Araştırması 2002 ve Türkiye Nüfus ve Sağlık Araştırması 2003 kullanılmıştır. Bu tezde kültürler arası bakış iki yönde ele alınmıştır. Bunlardan ilki doğurganlık düzenlemesinin kürtaj ve gebeliği önleyici yöntem kullanımı açısından aynı ülkedeki farklı etnik-kültürel gruplar için değerlendirilmesi, ikincisi ise etnik-kültürel farklılığın ayrı ülkeler için değerlendirilmesidir.

Ana dil, konuşulan dil, din ve etnik aidiyet dikkate alınarak tez kapsamındaki ülkeler için üç ayrı etnik-kültürel grup oluşturulmuştur. Bu gruplar Kazakistan'da (1) *Kazaklar*, (2) *Rusça konuşan Kazaklar* ve (3) *Ruslar*; Kırgızistan'da (1) *Kırgızlar*, (2) *Rusça konuşan Kırgızlar* ve (3) *Ruslar*; Özbekistan'da *(1) Özbekler, (2) Rusça konuşan Özbekler* ve*, (3) Ruslar* ve Türkiye'de *(1) Türkler, (2) Türkçe konuşan Kürtler* ve *(3) Kürtler'dir.*

Tezin analizleri şu aşamaları içermektedir: Betimsel analiz, lojistik regresyon analizi ve yapısal eşitlik modeli (nedensel model). Betimsel ve lojistik regresyon analizleri

çalışma kapsamındaki dört ülkeyi kapsarken yapısal eşitlik modeli (nedensel analiz) Türkiye için geliştirilmiştir.

Kürtaj ve yöntem kullanımını özetleyen göstergeler ülke nüfuslarının bütünü için değerlendirildiğinde, Türkiye Orta Asya ülkelerine göre daha yüksel yöntem kullanım düzeyi ve daha düşük kürtaj pratiği düzeyi ile dikkat çekmektedir. Ancak bu kaba sonuçlar betimsel ve lojistik analiz yöntemleriyle nüfusun alt grupları için irdelendiğinde her dört ülkede de aynı grupların kürtaj ve yöntem kullanımlarının yüksek olduğu görülmektedir. Tezin temel ilgi noktası olan etnik-kültürel gruplardan Türkiye'de Türkler ve Orta Asya ülkelerinde Ruslar hem yöntem kullanımı hem de kürtaj pratiği açısından diğer gruplara göre yüksek düzeyler sergilemektedir. Bu farklılık kürtaj pratiği için daha belirgindir. Türkçe konuşan Kürtler ve Rusça konuşan Orta Asyalılar ise tüm analizlerde diğer iki grubun arasındaki düzeylerle bir geçiş grubu olarak ortaya çıkmıştır. Ayrıca kürtaj kullananların yöntem kullanmayanlar olup olmadığını belirlemeye yönelik analizler de yapılmış, betimsel analizler kürtaj yaptıranların tamamına yakınının bir modern yöntem kullanmış olduğunu göstermiştir. Kürtaj yaptıranlar arasında hiç yöntem kullamamış ya da modern yöntem kullanmamış kadınlar çok küçük bir azınlıktır.

Kürtaj yaptırmış olup olmama ile araştırma tarihinde yöntem kullanıyor olup olmamanın belirleyicilerinin test edildiği lojistik regresyon analizleri de yöntem kullanımı ile kürtaj yaptırma arasındaki paralel ilişkiyi doğrulamış olup yöntem kullanmış olmak kürtaj yaptırmış olmak için kürtaj yaptırmış olmak ise yöntem kullanıyor olmak için istatistiksel olarak anlamlı belirleyiciler olarak ortaya çıkmıştır.

Tezin son aşamasında Türkiye örneğinde yapısal eşitlik modeli ile yöntem kullanımı ve kürtaj ilişkisi bütünsel bir yaklaşımla ve etnik-kültürel farklılık vurgusuyla ele alınmıştır. Model, bu ilişkideki önemi önceki analiz aşamalarında görülmüş olan "gebelik isteği", "gebelik öncesi yöntem kullanımı", "gebelik sonucu (kürtaj yada canlı doğum)", "hayatta olan çocuk sayısı" ve "eğitim" değişkenlerini içermektedir. Etnik-kültürel farklılık değişkeninin moderatör olarak yer aldığı yapısal modelde bu farklılığın yöntem kullanımı ve kürtaj kararı üzerinde hem doğrudan hem de "gebelik isteği", "hayatta olan çocuk sayısı" ve "eğitim" dolayısıyla etkisi olduğu görülmüştür.

Daha sonra aynı yapısal eşitlik modelinin geçerliliği üç etnik-kültürel grup için ayrı ayrı çoklu grup analizi methodu ile değerlendirilmiştir. Çoklu grup analizi sonuçları

Türkiye geneli için geçerli olan yapısal modelin Türkler için büyük oranda geçerli olduğunu ancak Türkçe konuşan Kürtler ve Kürtler için geçerli olmadığını göstermektedir. Bu sonuçlar yöntem kullanımı ve kürtaj arasındaki ilişkinin doğurganlık düzenlenmesinin bütünlüklü olarak ele alındığı bir bakışla incelenmesinin önemini ve bu ilişkinin etnik-kültürel gruplar için daha belirgin farklılar gösterebileceğini doğrulamıştır. Nüfusun tüm alt grupları için geçerli tek bir geçerli modelden söz etmek mümkün değildir.

CHAPTER I. INTRODUCTION

I.I Background

All through the modern history, human has tried to increase its control on fertility. Although the meaning and knowledge of control on the tempo and quantum of fertility have been changing, the basic means of fertility regulation, contraception and induced abortion[1], have always persisted.

Besides the changes in knowledge, meaning of fertility control has been varying depending on era and area. In the early ages of civilization in which increasing fertility and large population were considered as national power, unintended pregnancy was only an individual concern. There was no systematic production and distribution of the birth control methods but they existed as “female knowledge” (King, 1993). Legal frame for contraception was not mature yet and the issue was either ignored or prohibited in the governing level. Demand for contraception was the determining factor in the development of the types and level of method used. Other than *coitus interruptus* and *rhythm*, pre-modern form of contraceptives and so-called aborticide were extracted from plants. Several local methods existed and the knowledge about these methods had been passed from one generation to the next usually at the regional level (Riddle, 1994).

Fertility has become a national, and even an international, concern with the increasing population growth rates since early 1960s. Global population has shifted from 1.7 billion to 6 billion from 19th century to 20th century with three-quarters of this total living in the developing countries. Due to universal worry about over-population, agent of control has shifted from individual to state and non-governmental institutions. Development in abortion and contraceptive industry were supported by the policy changes in developing countries with the help of availability of international funds. The

[1] The termination of pregnancy before the foetus has become capable of sustaining an independent extrauterine life with the intention of avoiding a live birth.

intention of high control over fertility brought about substantial improvements in contraceptive technology and the medical[2] contraceptives have become worldwide promoted methods due to their low rate of failure. Therefore supply of means of fertility reduction turned out to be the determining factor in the second half of the 20th century. Parallel to the improvement in technology and distribution, legal frames for fertility regulation have been programmed in accordance with the countries' own cultural, political, and economical circumstances (UN, 1998).

Today, technologies of contraceptive methods and abortion practice, the distribution of the methods and services, and legal structure are well established. Globally, public and private institutions take responsibility in providing varying contraceptive methods and educated staffs under the auspice of governments. The crucial change in the last decades is that the issue is considered in a larger reproductive right context rather than handling simply as a control of reproduction. With this perspective, the notion of family planning of 1960s left its place to the notion of reproductive health. This differentiation stems from not only general development in the human rights issues but also empowerment of women with a parallel development in the strength of feminist movement. Accordingly, significance of individual choice in reproduction is acknowledged in fertility debate (Kabeer, 1992). Targets of the International Conference on Population and Development (ICPD), Cairo, 1994, and Fourth Conference on Women, Beijing, 1995 are the cornerstones in the development of above discussion. Since the Cairo conference, many countries have enlarged and/or redesigned their reproductive policies toward the goal of providing universal access to reproductive health care. After all, reproductive rights irreversibly are human rights (ICPD, 1994). Cairo conference is also important regarding the changes in the perception of induced abortion; different than the previous conferences, abortion is addressed as a component of reproductive health care (Chamie, 1995-1996). Even though abortion is not

[2] Any of various devices, drugs, or surgery intended to prevent pregnancy. Common ones are following: pill, diaphragm, intrauterine device (IUD), female and male condom, spermicides, injections, implants, and female and male sterilisation.

addressed as a method of family planning in the Program of Action of the Conference; it is referred as “other methods of choice for fertility regulation” in order to support responsible voluntary decisions about child-bearing (ICPD, 1994).

I.II Recent conditions and discussions concerning contraception and abortion

Even though both contraception and abortion[3] are used for limiting or spacing fertility, individual, public and institutional attitude towards contraception and abortion is conflicting. The main reason behind this attitude stem from their role in different phases of conception. Contraception is the method for fertility control before conceiving while abortion is employed after conceiving. Therefore even both limit or space fertility, contraception prevent conceiving while abortion ends pregnancy. In spite of the common acceptance of induced abortion as a reproductive right in most part of the world, the general intention is to decrease practice of abortion while increasing contraceptive use. Since abortion is a result of unintended pregnancy, increasing contraception and decreasing contraceptive failure are addressed as the definite way to eliminate abortion. Therefore higher contraceptive prevalence and lower rate of induced abortion became widely supported goals.

Certainly, contraceptive use causes a substantial decline in the possibility of unintended pregnancy. But in case of unintended pregnancy some decide to give birth while some others end the pregnancy with abortion. In global level, almost half of the all pregnancies and one fourth of the live births are unintended. Surveys show that the proportion of unintended pregnancies that end in abortion is higher in developed countries (Bongaarts and Westoff, 2000). Besides that international diversity, research in reproductive behavior within country show that induced abortion is high among subgroups in which contraceptive

[3] In this thesis, the term abortion refers to induced abortion.

prevalence is also high. Higher educated, urban resident, higher economic class women have higher contraceptive prevalence and have much more reliance on abortion in case of unintended pregnancy. Accordingly, some groups have higher control on their fertility both before and after conception.

In addition to the educational, residential, and economic factors; cultural factors such as ethnicity, religion, and mother tongue cause variation in use of abortion and contraception among people from same country. Just like in the studies on mortality, migration, and other subjects in fertility, the role of culture in fertility control is underestimated in most of the studies. Studies concerning differences in the demand for abortion and contraception mainly focus on the economic welfare status of the women's and/or families (Becker, 1960; Becker, 1965; Schultz, 1969; Schultz, 1976). However economic explanations are not enough to understand the place of contraception and abortion in fertility regulation. Thus, the explanatory attempt is expected to be developed in social and cultural context. Besides the basic medical facts, beliefs are important in the perception of abortion. Therefore users of abortion also vary in different populations due to beliefs of people. The analyses of differentiation in the abortion prevalence by marital status and birth order show that abortion is common among unmarried women and for their first pregnancies in developed countries while it is common among married women and it is rare for first pregnancies (before first live birth) in developing world (Agadjanian and Qian, 1997; Bozbeyoğlu et. al., 2003; Westoff et. al., 2002; Westoff et. al., 1998). Ending first pregnancy with abortion has more negative connotations than those for the higher order pregnancies in Turkey as well. Interviews with women in reproductive ages show that some women believe that abortion of first pregnancy results in permanent infertility (Bozbeyoğlu et. al., 2003).

The parallel increase -or decrease- in contraceptive use and abortion practice is mentioned in several studies (Agadjanian, 2002; Agadjanian and Qian, 1997; Altun, 1995; Avdeev, 1994; Bongaarts and Westoff, 2000; Marston and Cleland, 2004). Marston and Cleland (2004) link this correspondence to demographic transition process. They underline that

expected inverse relationship between the level of contraceptive and abortion is not observed for many countries. They claim that contraceptive supply does not fit people's desire for small family in transitional societies. They proposed that "*if other factors are constant, a rise in contraceptive use or effectiveness must lead to a decline in induced abortion or vice versa*". This assumption is founded on the stability of factors behind fertility but in practice *other factors* are dynamic and never stay constant for human behavior. Similarly, Bongaarts and Westoff (2000) associate high level of unintended pregnancies and abortion practice in some regions such as Eastern Europe, Hungary, and former USSR with small family norm in spite of inadequate supply of contraception. Strong positive association between abortion and contraceptive use in Kazakhstan is linked to the strong motivation of women to avoid pregnancy and contraceptive failure (Westoff, 2000). Avdeev (1994) presented the increase in the supply of contraception in former-Soviet region but he pointed out that medical contraceptives replace with traditional ones rather than abortion. On the other hand Agadjanian (2002) criticized straightforward and reductive assumptions about replacement of contraception with abortion. He mentions that replacement assumption is based on supply factors but analysis of supply is not enough to discuss trade off between contraception and abortion. Besides the variation in the supply, the difference in the demand must be examined. In his study cultural dynamics are emphasized as essential factors in the variation of the demand.

Demography literature shows that conventional understanding of the relationship between abortion and contraception is based on overestimation of supply factor and/or underestimation of demand factor in fertility control, and assumption of a unique rational reproductive behavior of human being regardless of her/his social and cultural context (Bongaarts and Westoff, 2000; Henshaw et. al., 1999; Marston and Cleland, 2004; Senlet et. al., 2001b; Westoff, 2000; Westoff et. al, 2002; Westoff et. al, 1998;). Interests of the approaches congratulate the effects of demand for fertility reduction mostly limited with economical motives behind the varying demand. Rational

reproductive action assumption acknowledges full consciousness and full control over fertility behavior (Marston and Cleland, 2004).

In this thesis relation between contraceptive use and abortion practice is discussed within the general view of reproductive behavior with a particular emphasis on control over fertility behavior. Motivation of majority of the studies on abortion in demography is to find out its alternatives and obstacles to trade off abortion with contraceptive methods. In this thesis abortion is not addressed as a problem that should be eliminated. Rather, it is perceived as an essential method of fertility regulation. Therefore, abortion and contraception are not assumed to *replace* with each other but should be *re-placed* in overall understanding of fertility control.

Obviously contraceptive supply is important for the use of fertility regulation means. But experience of fertility reduction in different settings show that demand is also-in some cases the main-determining factor. At this point, contribution of this thesis will draw attention to the demand for fertility control as the determining factor and underline the cultural factors rather than the macro and/or micro economical ones as essential in demand for fertility regulation. In this context, effects of economical factors are not underestimated but cultural factors as a super-determiner are highlighted. In the typical analysis of fertility behavior, culture is either eradicated in constant *other factors* or been *error* in the demographic model. Alternatively, fertility behavior should be analyzed in cultural context. Therefore, this thesis makes a particular emphasis on cultural factors in the relation between abortion practice and contraceptive use. Among the variety of cultural factors, this thesis focuses on the ethno-cultural factor which is reflected by ethnicity and language of communication. Therefore cultural pattern reflected by ethnicity is the center of attention.

Another approach of this study is the criticism of the rationality in reproductive behavior. Unique rationality with respect to reproductive behavior is rejected in this thesis due to existence of variation in behavior and impossibility of full control over fertility behavior. Full control over

fertility is rejected mainly due to gender relation which shapes the family structure, spouse relation, meaning of childbearing and motherhood, as well as the nature of sexuality.

Lack of interest about culture in demographic analyses resulted in limited data sources in the field concerning cultural diversity. Most of the research aim to collect quantitative data to calculate conventional indicators. But in the last decades a gradual increase has been seen in the study of demography within a larger social theory. This intention causes an increase in both qualitative studies and collecting data on social and cultural characteristics in quantitative studies in the field of demography. Actually, conceptualization of culture in relation with reproductive behavior has particular difficulties. Fricke (1997) defines culture as part of a shared background and underlining framework of individual characteristics. He also states that for comprehending the meaning and motivation, cultural patterns present a necessary context. Similarly, in this thesis ethno-cultural belonging, as a significant reflector of the cultural pattern, is taken into account in explaining differentiation in the meaning of and motivation towards abortion practice and contraceptive use. Basic available characteristics and practices that present cultural diversities within a country are used in the cultural taxonomy of this study. Fundamental cultural variations within a country show correspondence with ethnicity and religion. Although regional variations present similarity with cultural differentiations' map, it is a plausible consequence of the historical heterogeneity of the settlements of ethnic groups (Kurds in Turkey, Basks in Spain, and French population in Quebec, urban based settlements of Russian population in Central Asian countries). It is aimed to make a cultural taxonomy avoiding any reduction the concept of culture to either a single variable or a crude list of variables. It is also aimed to reflect dynamic structure of culture in proposed taxonomy. At this point, ethno-cultural grouping of Agadjanian and Qian (1997) for Kazakhstan provides a helpful base for the taxonomy of this thesis. Their study groups are formed according to mother tongue, and language of interview. Three groups are constructed; Kazaks interviewed in Kazak, Kazaks interviewed in Russian, and Europeans interviewed in

Russian. Their study guided me while composing the proposed taxonomy for ethno-cultural belonging in this thesis.

In accordance with forgoing discussion about relation with ethnicity and culture and Agadjanian and Qian's taxonomy, cultural diversity in this thesis is considered with cultural belonging dominated by ethnicity and this taxonomy is called as ethno-cultural groups. Groups proposed in this thesis are composed regarding historical/traditional ties passing with mother tongue, ethnicity and religion and functional/dynamic ties transforming with language of communication. This grouping is a refinement compared to ethnic distribution since ethnicity was used as a cultural separator which is represented by mother tongue and is strengthened by religion. Moreover ethno-cultural groups correspond to dynamism of culture with language of communication. A shift from a mother tongue to another language for communication is a powerful indicator of cultural assimilation or cultural integration.

A comparative study in the cases of Turkey and selected Central Asian countries, namely Kazakhstan, Kyrgyzstan, and Uzbekistan[4] is proposed for the analysis of theoretical frame of this thesis. These countries are selected mainly due to their popularity in the recent discussions about replacement of abortion with contraception. These countries have exceptionally high reliance of abortion among other primarily Muslim countries. Actually, all former-Soviet Union countries have remarkably high preference for abortion. During the Soviet period methods of contraceptives were not widespread and easy to access. After the dissolution of the Union, contraceptive market has also been affected from the general development of market economy in the independent states. Consequently, contraceptive methods are easier to access and private sector has speedily increased its share in the contraceptive market.

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[4]Turkmenistan and Tajikistan also has several historical, geographical, political, and demographical common grounds with four mentioned Central Asian Republics. But Tajikistan is not included in this thesis due to lack of demographic data and Turkmenistan could not be included study in this thesis due to restriction of Turkmenistan Demographic and Health Survey data.

This important transformation within a short period of time resulted in an emphasis on the contraception and abortion pattern and level of these countries. Therefore Kazakhstan, Kyrgyzstan, and Uzbekistan become very popular in the recent discussions about possible trade off between abortion and contraception.

A further criterion behind this selection is the multi-ethnic and multi-cultural pattern of their population. Turkey is historically a multi-ethnic country. Minorities are predominantly Muslim and Kurds and Arabs have the highest first and second share in the country. On the other hand a non-Muslim population has a very few share in the population of Turkey. Central Asian region also hosted many different ethnic groups. Among them Russian have significant share in the recent ethnic mix. Multi-ethnic pattern of population in all four studied countries determines also cultural pattern of the countries.

Other common grounds of Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkey can be summarized as their political transformation in early 1920s, secular state formation, Islamic influence in culture, and economic liberalization in early 1990s. In order to underline basic demographic grounds for this study, some selected demographic indicators of all four countries are given in Table I.II.1. For a multi-cultural and comparative analysis, Turkey and Central Asian countries have proper basis also in terms of basic demographic indicators.

Turkey as a predominantly Muslim and multi ethnic country is a sufficient case for discussion on the place of abortion and contraception regarding ethno-cultural diversity. Turkey is one of the few countries that have liberal abortion policy among Muslim dominated countries. In spite of the encouragement of use of medical contraceptives, traditional methods and abortion have still high share in fertility regulation. Abortion was in use commonly even before its legalization in 1983. With these features of fertility control pattern, Turkey has received attention in discussion of the relation between contraceptive use and abortion practice in literature (Senlet et. al.,

2001a; Senlet et. al., 2001b; Akın and Bertan, 1996; Bozbeyoğlu et. al, 2003; Gürsoy, 1996). The major constraint for ethnic and/or ethno-cultural studies in case of Turkey is that neither demographic surveys nor population censuses involve question on ethnicity. On the other hand, distribution of population by mother tongue is available based on recent demographic surveys and previous censuses (HIPS and Macro International, 1999; HIPS, MoH and Macro International, 1994; SIS, 1929; SIS, 1937; SIS, 1944; SIS, 1947; SIS, 1961a; SIS, 1961b). Mother tongue is the basic and strongest separator of the two biggest ethnic groups in Turkey. Trend in the ethnic distribution has experienced only gradual differentiation since the formation of Republic of Turkey. Surveys show that Turks constitute majority of the population and Kurds are the second largest group in the country. Several different ethnic groups live in Turkey and they consist of two to five percent of the total population. The biggest two ethnic groups historically live together and both are predominantly Muslim[5]. Traditional settlement of Kurds is in the east and southeast of Turkey but migratory flows in the last decades have reduced residential segregation of two groups. Besides their long history living in the same territory and common religion, integration of Turkish and Kurdish population through marriage is quite limited[6]. Both groups keep their cultural diversity based on their ethnic identity. This differentiation is also reflected in demographic characteristics of the groups. Accordingly, Turks and Kurds generally act as actors of different demographic regimes. Since Turkish is the official language of Turkey and Kurdish is depressed in public and political life, Kurdish is the primary symbol of the Kurdish ethnicity. Although mother tongue retention exists for both groups, Turkish has been used as the primary language of communication among a group of Kurds. This group, Turkish speaking Kurds, represent a transitional and/or integrated pattern between two cultures.

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[5] According to 1998 Turkey Demographic and Health Survey, 95 percent of Turks and 97 percent of Kurds are Muslim (calculated by authour).

[6] Only 2 percent of all marriages are mix-marrriages between Turks and Kurds (Koç, et.al, 2008).

Besides the in-country variations, Turkey is geographically located between different demographic regimes and population policies. Historically, Turkey has more liberal fertility control policy than its south and southeastern neighbors. Although the legal structures of Turkey and European countries covering abortion and contraceptives have almost similar characteristics, the fertility behavior in Turkey is different from those of its western neighbors. Fertility of European neighbors has already dropped well below to replacement level. Although level of fertility in western part of the country experienced a rapid decrease and shows a convergence with European countries, this trend is not convenient in the cases of other regions.

Central Asian countries also have some particularities in their region. They had quite liberal fertility regulation policies compared to their southern neighbors since the formation of Soviet Union. Independent states, Kazakhstan, Kyrgyzstan, Uzbekistan are formed after collapse of the Union but their legal frame for fertility regulation has not changed during the transformation. Abortion practice is at the highest level in former Soviet countries. Although Central Asian states have the lowest level among former Soviet countries, their abortion prevalence is quite higher than the global average (Agadjanian, 2002; AGI, 1999; Centers for Disease Control and Prevention and ORC Macro, 2003; Coale, 1994; Henshaw et.al, 1999; Popov, 1991; Westoff et.al, 1998) As mentioned before, legal structure concerning fertility regulation has not changed but the variety, promotion, and distribution of contraceptive methods have improved during the transition to market economy. This improvement in contraceptive availability and traditionally high abortion practice of the region arouse the discussion on a trade off between abortion and contraception. Besides the distinctive fertility related features of Central Asian states compared to other former Soviet and neighboring countries, fertility behavior differentiates in the selected countries within the country especially based on ethnicity. The region traditionally has a multi-ethnic population since it is located between powerful countries and important trade ways. Furthermore the region was conquered by several empires/states. Because of these facts, Central Asia

received migrants from neighboring regions. Migratory flows from Russia increased following the inclusion of Central Asia into the Soviet Union. As a consequence, Russians are the second largest group in selected countries following the titular. In spite of the long history in the shared territory, Russians and natives in Central Asia have different demographic characteristics during both Soviet and post-Soviet era. Like other fertility behaviors, the level and the pattern of abortion practice and contraceptive use of Russians and natives show necessary variations. Demographic data is collected in order to reflect multi-ethnic composition of Central Asia before and after independence. The most reliable and nationally representative data after last Union census in 1989 comes from the Demographic and Health Surveys. These surveys include data on ethnicity, religion, mother tongue, and communication language which are important indicators of ethnic and cultural identity in the region.

Ethno-cultural groups are composed as regards the data availability and countries' own characteristics. Turkish in Turkey and Russian in Central Asia are the language of communication of transitional groups. In case of Turkey, mother tongue, and language use between spouses are employed to form three ethno-cultural groups; Turks, Kurdish speaking Kurds, and Turkish speaking Kurds. Ethnicity, religion, mother tongue, and language of interview are used to compose grouping for Kazakhstan and Uzbekistan while speaking language at home replaced with language of interview for Kyrgyzstan. Three ethno-cultural groups consist of natives, Russians, and Russian speaking natives in the cases of Kazakhstan, Kyrgyzstan, and Uzbekistan. Superiority of the minority and majority languages is different in the case of Turkey and in the cases of Central Asian countries. While the language of the majority group, Turkish, has also superior position in Turkey, the language of the minority group, Russian, has superior position in many fields in Central Asia. This differentiation of the languages is due to the difference in the hegemonic position of the minority and majority groups in Turkey and Central Asia. Correspondingly, the direction of the difference in fertility behavior among minority and majority groups is also different. The minority group status hypothesis proposed by Dudley et. al (2006)

underlines that the socio-economic status of the minority group determines the direction of the difference in the level of fertility between minority and majority groups. This variation is not a disadvantage for the frame of this thesis, since the focal point is the difference itself regardless of its direction in contraceptive use and abortion practice between ethno-cultural groups.

Despite the worldwide reliance on abortion, its legal status is not uniform. In 40 percent of all countries induced abortion is totally illegal or legal only if it is for to protect women's life/health. Rest of the world has liberal abortion policies (AGI, 1999, Rossier, 2003). Yet, there are some differences in terms of gestational limits, and consent requirements in those countries. Gestational limit is usually 12 weeks; it is 10 weeks in Turkey, and 12 weeks for Central Asian countries. In most of the countries with liberal abortion policy, written consent of women is required. In addition to this, permission of husband is required for married women in Turkey. Referring this requirement, Gürsoy (1996) suggests that contemporary abortion policy is a confirmation of increasing role of state policy on gender inequality in Turkey. This approach helps to empower the national state and family ideology. Only few predominantly Muslim countries have liberal abortion policy; other than the former-Soviet countries, abortion is legal in Tunisia, and Turkey.

Induced abortion and contraceptive methods were prohibited in the pronatalist period in Turkey till First Population Law in 1965. That policy was resulted from heavy population loss in the wars before foundation of Turkish Republic in 1923. The First Population Law has legalized contraceptive methods except sterilization. Both sterilization and induced abortion had become legal only if there were any risk for mother and child health. These two means of fertility control had been legalized by Second Population Law in 1983. So, induced abortion was officially recognized on socio-economic grounds. Contemporarily, there is a variety of abortion technologies. Pharmacological method is not permitted in Turkey. Of them vacuum aspiration is common in Turkey. Traditional abortifacient methods are still in use.

Induced abortion was first legalized in 1920 in the Soviet Union. After some restrictions during the 1936-55 period, abortion on request has been reinstated as legal method of fertility control in 1955 in all Soviet countries. Justification of the first legalization is known as hunger and high reliance of illegal abortion. As a reaction to extremely reduced population growth, abortion was forbidden between 1936 and 1955. But that law did not have significant effect on the level of abortion (Andeev, 1994). Not surprisingly, abortion rates were different among republics. Besides the same legal framework in all Soviet Union, abortion rates have always been lower in Central Asian republics compared to the rest of the Union (Appendix I, Table I.1). Historical difference of the region from European part of the Union affects not only abortion level but also other demographic indicators such as contraceptive prevalence rate, total fertility rate, and infant mortality rate (Anichkin and Vishnevsky, 1994; Bondarskaya, 1994; Center for Disease Control and Prevention and ORC Macro, 2003; Coale, 1994; Lutz and Scherbov, 1994).

I.III Purpose

The aim of this thesis is to discuss the place of abortion and contraception in fertility regulation regarding the influence of the ethno-cultural characteristics. Turkey and three Central Asian countries, Kazakhstan, Kyrgyzstan, Uzbekistan, are selected cases for different stages of this discussion. Therefore the thesis is a comparative study on the induced abortion and contraception in Turkey and Central Asian countries with a special focus on ethno-cultural differentiation. The consequence of discussion of the place of abortion and contraception is supposed to be an alternative for conventional description of the role of the two means of fertility control. Thus this attempt is called as *re-placement of abortion and contraception* rather than replace abortion with contraception.

Most of the studies on abortion and contraception are supply oriented and they claim that the improvement in the quantity and the quality of contraceptive supply will eventually result in an inevitable disappearance of abortion practice. On the other hand studied countries have high reliance on abortion in spite of the accessibility of contraceptive methods. In this thesis, the demand for abortion and contraception are emphasized. Consequently determining effect of the demand regardless of supply in the fertility regulation mix is highlighted. Ethno-cultural background is discussed as the main/moderator/independent influential of the fertility control pattern of individuals/couples. Comparative study on four different countries provides us to probe our hypothesis for different population and figure out the common ethno-cultural characteristics that affect use of contraception and practice of induced abortion.

The main objectives of this thesis are to:

- Criticize the idea of replacement of abortion with contraception with a cross-cultural perspective,

- Develop an alternative model to re-place abortion practice and contraceptive use in overall picture of fertility regulation with a specific emphasis on ethno-cultural features for the case of Turkey.

and the secondary aims of this study are to:

- Underline the significance of ethno-cultural characteristics in fertility behaviour,
- Consider on the limitations of conventional demographic data while taking culture into account in explaining demographic behaviour.

Organization of the thesis is as follows:

Following the introduction in Chapter I, Chapter II aims to review theoretical discussion about relationship between abortion practice and contraceptive use within general picture of fertility control. Two major concepts replacement/re-placing of abortion with contraception and ethno-cultural grouping are clarified in Chapter III. Therefore, conceptualization of replacement of abortion with contraception versus re-placing abortion and contraception and ethno-cultural groups are discussed in this chapter. Literature study of the thesis is given in Chapter IV. In Chapter V hypotheses and research questions are stated, followed by methodology of the thesis. The data, the variables and methods of analyses are presented in this chapter. The descriptive and multivariate analyses of the thesis are also presented in two chapters, respectively Chapter VI, and Chapter VII. The structural model of contraception and abortion is presented in chapter VIII. Finally, conclusions, discussions, and suggestions of the thesis are presented in Chapter IX.

Table I.II.1 Selected social and demographic indicators for Kazakhstan, Kyrgyzstan Turkey, and Uzbekistan

Indicators	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan	Source/Notes
Population Mid-2006	15,300,000	5,200,000	73,700,000	26,200,000	Source: PRB 2006 World Population Data Sheet
Birth Rate (annual number of births per 1,000 total population)	18	21	19	23	Source: PRB 2006 World Population Data Sheet
Death Rate (annual number of deaths per 1,000 total population)	10	7	6	7	Source: PRB 2006 World Population Data Sheet
Rate of Natural Incr. (birth rate minus death rate, expressed as a %)	0.8	1.4	1.3	1.6	Source: PRB 2006 World Population Data Sheet
Total Area (sq. miles)	1,049,151	76,641	299,158	172,741	Source: PRB 2006 World Population Data Sheet
Density (population/sq. mile)	15	67	246	152	Source: PRB 2006 World Population Data Sheet
Urban Population (%)	57	35	59	36	Source: PRB 2006 World Population Data Sheet
Migration (net) per 1,000 Population	1	-5	0	-2	Source: PRB 2006 World Population Data Sheet
Population Change 2006-2050 (projected %)	-1	58	23	43	Source: PRB 2006 World Population Data Sheet
Population Under Age 15 (%)	27	32	29	35	Source: PRB 2006 World Population Data Sheet
Population Over Age 65 (%)	8	6	6	5	Source: PRB 2006 World Population Data Sheet
Ever-Married Females Ages 15-19 (%)	9	14	12	7	Source: PRB World's Youth 2006 Data Sheet
Ever-Married Males Ages 15-19 (%)	1	1	-	1	Source: PRB World's Youth 2006 Data Sheet
Infant Mortality Rate (infant deaths per 1,000 live births)	29	30	25	58	Source: PRB 2006 World Population Data Sheet
Child Mortality Rate (deaths per 1,000 children under age 5), 2005	58	46	49	52	Source: UNFPA Population and Reproductive Health Country Profiles, 2003
Life Expectancy at Birth, Females (years)	72	64	69	63	Source: PRB 2006 World Population Data Sheet
Life Expectancy at Birth, Males (years)	61	72	74	70	Source: PRB 2006 World Population Data Sheet
Total fertility rate (children per women)	2.2	2.6	2.2	2.7	Source: PRB 2006 World Population Data Sheet
Median age at first birth for women age 25-49 (years)	22.4[1]	21.7[2]	21.8[3]	21.5[4]	Source notes: [1] KDHS-1999 [2] KRDHS-1997 [3] TDHS-2003 [4] UHES-2002
GNI PPP Per Capita, 2005 (US$)	$7,730	$1,870	$8,420	$2,020	Source: PRB 2006 World Population Data Sheet
Population Living Below US$1 per Day (%)	<2 [5]	-	2.4 [5]	3.3 [5]	Source: UNFPA Population and Reproductive Health Country Profiles, 2003 Notes: [5] Data for year 2002

Indicators	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan	Source/Notes
Literacy Rate, Ages 15-24, 2000-04, Female (%)	100	-	93	100	Source: PRB 2005 Women of Our World
Literacy Rate, Ages 15-24, 2000-04, Male (%)	100	-	98	100	Source: PRB 2005 Women of Our World
Economically Active, Female, Ages 15+, 1995-2002 (%)	65	55	27	61	Source: PRB 2005 Women of Our World
Economically Active, Male, Ages 15+, 1995-2002 (%)	76	74	70	74	Source: PRB 2005 Women of Our World
Population With Access to Improved Sanitation, Urban, 2002 (%)	87	75	94	73	Source: PRB 2006 World Population Data Sheet
Population With Access to Improved Sanitation, Rural, 2002 (%)	52	51	62	48	Source: PRB 2006 World Population Data Sheet
Percentage of married women currently using any method of contraception	66.1[1]	59.5[2]	71.0[3]	67.7[4]	Source notes: [1] KDHS-1999 [2] KRDHS-1997 [3] TDHS-2003 [4] UHES-2002
Percentage of married women currently using any modern method of contraception	52.8[1]	48.9[2]	43.1[3]	60.0[4]	Source notes: [1] KDHS-1999 [2] KRDHS-1997 [3] TDHS-2003 [4] UHES-2002
Unmet Need for Family Planning (%)	8.7 [6]	11.6 [7]	10.1 [8]	13.7 [9]	Source: UNFPA Population and Reproductive Health Country Profiles, 2003 Notes: [6] Data for year 1999 [7] Data for year 1997 [8] DHS year 1998 [9] Data for year 1996
Induced abortion out of all pregnancies (%)	35.9[1]	27,2[2]	11,3[3]	20.2[4]	Source notes: [1] KDHS-1999 [2] KRDHS-1997 [3] TDHS-2003 [4] UHES-2002
Lifetime experience with induced abortion (15-49 ever-married women)	51.6[1]	38.4[2]	23.9[3]	28.8[4]	Source notes: [1] KDHS-1999 [2] KRDHS-1997 [3] TDHS-2003 [4] UHES-2002
Abortion Policy, 2004	Permitted on broad socioeconomic grounds and health grounds or without restriction as to reason, with gestational limits. Certain other restrictions may apply such as spousal and/or parental consent.				Source: PRB 2005 Women of Our World

CHAPTER II. THEORETICAL FRAMEWORK

In accordance with forgoing historical progress, contraception and induced abortion as means of fertility regulation are among the core concepts of the field of demography. Bongaarts' (1978) framework for proximate determinants of fertility is a cornerstone with its emphasis on relation between the prevalence of contraception and abortion, and the level of fertility. The replacement of abortion with contraception is the main concern of the most of the studies aiming to evaluate tradeoff between contraception and abortion addressing to the Bongaarts' approach (Avdeev, 1994; Bongaarts and Westoff, 2000; Hancıoğlu, 1997; Senlet et. al., 2001a; Senlet, et. al., 2001b; Westoff, 2000; Westoff et. al., 2002; Westoff et. al., 1998).

Although both contraception and abortion[7] are for the same necessity; limiting or spacing fertility, they are used in different phases of conception. Contraception is the method for fertility control before conceiving while abortion is employed after conceiving. In both individual and institutional level, worldwide tendency towards abortion and contraception is contradictory. Even though induced abortion is accepted as a reproductive right in most part of the world, the global tendency is to decrease prevalence of abortion while increasing contraceptive use. Since decreasing unintended pregnancy is seen as the only way for this purpose, increasing contraception and decreasing contraceptive failure are addressed as the definite solutions. Therefore higher contraceptive prevalence and lower rate of induced abortion became widely supported goal.

A critique of supply and demand sided approaches of fertility reduction is important in the discussion of the place of contraception and abortion in fertility regulation. Population planning programs are supply side of reduction while individual reproductive preferences are the demand side.

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[7] In this thesis, the term abortion refers to induced abortion.

Supply-sided approach claims that the performance of the population planning programs state precisely the level of reduction. From this point of view, providing contraceptive methods and abortion is determining their prevalence and, inadequate supply of contraceptive methods results in higher prevalence of abortion. Therefore, increase in the available amount of contraceptives will be the cause of corresponding reduction in the use of abortion.

Demand-sided approach aims to explain fertility reduction with the change in desired fertility. According to this view, stimulus of fertility reduction is the decreasing demand for children. While classical transition theory (Thompson, 1929; Davis, 1945; Notestein, 1945) explains the basis of the reduced demand for children with macro-economic terms, demand theory or new household economics theory (Becker, 1960; Becker, 1965; Schultz, 1969; Schultz, 1976) presents the reasons with micro-economic terms. Thus, all acknowledged Coale's (1973) last condition; *reduced fertility must be perceived to be advantageous*, for fertility reduction in Europe. According to Coale, the economic advantage of reduced fertility is the driven force behind fertility transition. Development in the discipline of demography shows that economic theories are not sufficient enough to explain fertility trends. Demand theory of fertility is enriched with social and biological constraints by Leibenstein (1974 and 1975) and Easterlin (1975 and 1980) and cultural dimensions by Caldwell in his well-known study of intergenerational wealth flows (1982) and by Lesthaege (1991) in his study on concept of secularization.

Cleland and Wilson (1987) mention that the last condition of Coale is over emphasized during the demand debate while the first two; fertility *must be within calculus of conscious choice*, and *effective techniques of fertility reduction must be known and available*, are ignored. All three conditions are critical for evaluating supply and demand sided approaches of fertility reduction. Actually condition concerning effective techniques of fertility reduction is highly related with supply side of contraception. Program targets, especially in the developing countries, make a great deal with this

point and the issue is covered by several policy oriented papers (Heer, 1977; Popov, 1991; Senlet et. al., 2001a; Urlanis, 1970; Westoff et. al., 1998).

Supply and demand side of fertility reduction is rather old but still an important debate. Nowadays, several studies highlighted the advantage of handling both sides in company (Ginneken, and Razzaque, 2003; Merrick, 1993; Simmons, 1992). Supply and demand side of contraception is also relevant and useful discussion in the studies on contraception and abortion. Although mass family planning programs after 1960s directed their attention to providing contraceptive methods, means for fertility regulation were started to be used in many regions regardless of any systematic supply. Avdeev (1994) called contraceptive and abortion use in Europe and in other developed regions as demand oriented while calling them supply oriented in developing countries. This typology is convenient to describe the general picture. On the other hand, contribution of supply and demand factors of contraception and abortion may not be uniform throughout the country. In Turkey for instance contraceptive prevalence increased following the adoption of anti-natalist population policy in 1960s. However, using contraceptive methods and practicing abortion were existing phenomenon in İstanbul and İzmir even in the Ottoman period (Duben and Behar, 1998). This fact is the consequence of the demand for contraception in those provinces in spite of the lack of method supply. Abortion was illegal till the second Population Law in 1983 but abortion prevalence, as a result of demand for abortion, was quite high before legalization. Effect of the demand factor is also seen in the contraceptive mix in Turkey. Although medical contraceptive methods have been promoted since 1960s, reliance of traditional contraceptive method, namely withdrawal, keeps its highest prevalence among all methods.

Supply and demand discussion is essential for this thesis since the supply oriented approach constitutes the ground of the idea of replacement of abortion with contraception. In this view, high reliance of abortion is explained by inadequate supply of contraceptive methods. Therefore, it is

proposed that increase in the prevalence of contraception will eventually result in trade off between abortion and contraception.

Place of contraception and abortion should be discussed within a larger debate of fertility behavior. Supply and demand factors are very significant but not sufficient enough to understand dynamics behind fertility behavior. Referring Cleland and Wilson's (1987) emphasis on the Caole's first condition for fertility reduction, consciousness about fertility still needs more emphasis in order to recognize means of control in fertility regulation. In other words, neither demand for nor supply of contraception is not enough regardless of the ability to use.

At this point, it is useful to invoke contribution of the rational choice theory in demography. Concept of rationality in social sciences is originated from economics. According to the theory, individual is motivated by the wants and goals and calculates her/his cost and benefit while choosing the way to her/his preference (Browning, et. al., 2000). Considering rational choice theory, a rational actor -in her/his demographic behavior- aims to maximize her/his well being. According to this view, there is one unique way of satisfaction and people, regardless of their cultural settings, act in purpose (Heath, 1976; Carling 1973; Coleman 1973 cited from Browning, et. al., 2000).

Rational choice theory is criticized in terms of its adaptation to collective action and its insufficiency for explaining social norms (Scott, 2000). Similarly, dynamics of fertility behavior is much more complex and people are not always rational in their reproductive behavior. Moreover there is no unique form of rationality and there should be more than one rational in reproductive choice. As Dorjanhn (1986) stated, "*fertility decisions are accidental, emotional, non-rational in relation to cultural factors relevant to such decision-making*". Otherwise all couples, whom do not want to give birth, either use contraception or all unintended pregnancies end with

induced abortion. Conceiving is a product of heterosexual intercourse so dynamics of sexuality is one of the determining factors for reproduction. Even nature of sexuality alone is enough to be suspicious about rationality in reproductive behavior.

Actually, rational choice is rooted from the western experience for demographic processes. Non-western part of the world is expected to follow this western practice. Since the expected convergence is not performed, the latter is labeled as non-rational. This conceptualization is the acceptance of unique rational act in demographic behavior. On the other hand neither today nor in the pre-modern ages, reproductive behavior has been simply determined by only individuals/couples but traditions, norms, values, class structure, and legal frames. In spite of the fact that legal structure does not show variation within the boundaries of a country, cultural structure shows variation within the country influencing the fertility behavior accordingly. Therefore, place of contraceptives and abortion should be discussed in relation to cultural diversity. Although both are the proximate determinants of fertility, their individual and social level perception is highly different. According to Agadjanian (2002) there is "*socially and culturally constructed difference in perception of attitudes towards contraception and abortion*".

CHAPTER III CONCEPTUAL FRAMEWORK

The aim of this chapter is to clarify two crucial concepts of this thesis. The first one is *re-placing abortion and contraception* and the second is *ethno-cultural belonging*. Both concepts are essential for understanding of the basic propositions of this study. In this chapter, formerly the concept of re-placement will be introduced and idea of re-placing abortion and contraception will be explained. Later, the concept of ethno-cultural belonging will be discussed and lastly formation of ethno-cultural groups for each country will be presented.

III.I Concept of re-placing abortion and contraception

Concept of re-placing abortion and contraception is a kind of counter argument against the concept of replacement of abortion with contraception. Replacement indicates a trade off between abortion and contraception or in other words refers to the substitution of contraception for abortion (Bongaarts and Westoff, 2000; Marston and Cleland, 2004; Senlet, et. al, 2001a; Westoff, 2000; Westoff, et. al, 2002; Westoff, et. al, 1998). According to this understanding, abortion is totally a consequence of either inadequacy or inefficiency of contraceptive use. Therefore ultimately, in perfect contraceptive society, abortion will replace contraception. On the other hand re-placement accepts the particular necessities of the two means of fertility regulation. Actually, differentiation in the level and quality of contraceptive use affects the level and the pattern of abortion use. Besides the variation in contraceptive use, multiplicity in economic, social, and cultural structure continuously creates a deviation in the use of abortion. But this effect does not result in the abolishment of the place of abortion but change in the place of the both means of control. Therefore a dynamic model to reflect the place of abortion and contraception is a significant need not only for policy makers but also theoreticians of the study of demography.

Concept of re-placing is also critical to show the motivation of this study. In this thesis, abortion is not addressed as a problem which will be

solved by increasing contraception. But rather abortion assumes common practice of all ages which has particular place in fertility regulation. This conceptualization does not totally reject effect of the level of contraceptive use on the possibility of having abortion but refuses that contraception completely meets the need of abortion seekers.

Concept of replacement of abortion with contraception is very popular in demographic literature both for Central Asian countries and Turkey. Increasing rate of medical contraceptive methods in the region arouses the attractiveness of the issue. Using the concept of re-placing of abortion and contraception reflects the criticism about those studies (Agadjanian, 2002; Agadjanian and Qian, 1997; Avdeev, 1994; Bongaarts and Westoff, 2000; Marston and Cleland, 2004; Senlet, et. al, 2001b; Westoff, 2000; Westoff, et. al, 2002; Westoff, et. al, 1998)

III.II Concept of ethno-cultural

Culture is the explanatory context of this thesis as is conceptualized by Hammel (1990) for the studies of demographic behaviour. He mentions that different demographic behaviours of linguistic groups in spite of the identical economic conditions, stable demographic behaviour in a region regardless of changing economic conditions, and varying demographic behaviour of particular groups in the face of common demographic measures are not reasonable without taking their cultural context into account. Fricke (1994) underlined the necessity of rethinking the position of demography within a wide social theory while he addressed cultural theories as the potential solution of the epistemological crisis of demography. Later, Kertzer (1997) criticizes the underestimation of the role of culture in demographic analysis. With the similar necessities Bernardi (2007) addresses the theory and the methodology of anthropology in the field of demography for providing better understanding of demographic phenomena. Bernardi highlights culture, gender, and political economy as the main theoretical concepts in anthropological demography. Although significance of the cultural context in the explanation of demographic behaviour is acknowledged by some demographers, there is no unique way to conceptualize culture in demography. Conceptualization of culture is between two margins; culture as determiner of social action and culture as shaped by individuals. Hammel (1990) called this taxonomy as culture for the people and culture by the people.

Any of the conceptualizations puts out the role of shared background based on common language, ethnicity, religion, or region. Several studies admit that shared ethnicity and religion are associated with primary cultural variations within a country. Labelling those common groups by culture as identifier is the easiest use of the concept of culture (Hammel, 1990). However this type of conceptualization describes culture as a constant status. Therefore this taxonomy is not convenient to reflect dynamism of cultural context. In the conceptualization of this thesis, people with shared background are not only *subjects* of the common culture but they also act as

agents of the common culture. According to this understanding people are born into a cultural setting and their behavioural formations develop in this setting but cultural setting is neither stable nor the people are passive followers. On the other hand culture is shared but in a dynamic context which is differentiated by its members. With another word, in Hammel's terminology, this study conceptualizes culture as culture by people. Dynamism is not observed only within a cultural context but also between different cultures. Cultural transition is the consequence of dynamic relation between cultures. Therefore cultural context vary not only by the experiences of its member but also in relation with different cultures. According to this understanding there is no stable taxonomy for culture. Before furthering the issue of ethno-cultural belonging it is critical to mention that none of the taxonomy for culture is totally adequate. As Agadjanian and Qian (1997) remind for ethno-cultural groups in Kazakhstan in their study, *none of the classification represent all the nuances of the ethno-cultural kaleidoscope* of a country.

Taking limitations and difficulties into account, significance of the characteristic and history of population of countries studied are obvious for the bases of classification. Current appearance of cultural formation is not independent from political, social, and economical contexts of countries. Cultural identity in this thesis is assessed with cultural belonging reflected by ethnicity and it is called as ethno-cultural groups. It should be stated that cultural indication of ethnicity varies according to country. Therefore, to be Russian in Russia resulted in different demographic behaviour than to be so in a Central Asian country. Proposed ethno-cultural groups are specific for studied countries circumstances. For these reasons, it is very useful to summarize features of population with particular emphasis of their effects in cultural formation in Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkey.

Kazakhstan, Kyrgyzstan, and Uzbekistan have some regional and historical common characteristics influencing their contemporary ethno-cultural formation. All three countries are in Central Asia, the oldest inhabited area of the world. The first inhabitancies in the region were in

1500 BC. People in Kazakhstan and Kyrgyzstan are traditionally nomadic while people in Uzbekistan are settled. Region is on the way of important historical trade way, Silk Road. Therefore, varieties of cultures were hosted in the region. Turkic/Mongolian, Persian, and Arabic influences are important for countries' history in pre-Russian period. All three countries are Turkic origin. Arabic influence in 7th century into region has brought Islam and currently majority of population is Sunni Muslim. Persian influence has appeared in terms of language and culture. There were political units but not states in the contemporary sense in Central Asia in pre-Russian period. Interest of Russia in the region was purely colonial and rooted from its needs of raw cotton for their growing textile industry in order to balance pressure of British Empire in 19th century. In 1865, Russian Empire created control over the region and Governate General of Turkistan was founded. After Bolshevik Revolution, Tashkent Soviet was established as administrative centre of Turkistan. Borders in Central Asia did not exist before National Delimitation Policy in 1924-1936. By this policy, borders of Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, and Tajikistan were drawn. These borders have been kept even after the formation of independent states following the collapse of the Soviet Union. The policy is critical not only for the borders but also the formation of the national identity in the region. By the National Delimitation Policy territorial-based nationality was emphasized. Officially written national histories were used to fit newly emerged national identity in the drawn boundaries. Language policy and alphabet changes were also significant during the period. In the early period of National Delimitation Policy, Uzbek Soviet Socialist Republic (Uzbek SSR) was formed on 27th October 1924. In that period Kyrgyz and Kazaks were under the rule of the Russian Soviet Federative Socialist Republic (RSFSR). Then Kyrgyz SSR and Kazak SSR were formed in 1936. Although national identity was emphasized and boundaries were shaped during the National Delimitation Policy, those territorial units were not nation-states. Nation-state formation is quite late in the region. Kazakhstan, Kyrgyzstan, and Uzbekistan were established as independent states in 1991 after the collapse of the Union. National statehood is emphasized through the national institutions. National Delimitation of the Central Asian

republics of 1924 and further independent state formation have not resulted in total eradication of other identities in the region. For example, religious identity is still very important in the region. Religious differences correspond with the national differences in the region. Therefore Islam is part of national identity and an important supra-national identity of the natives of Central Asia. Although religion lost its importance during the Soviet period, Islamic rituals have been dominating social and cultural life especially for marital and parental experiences. After independence states in Central Asia have adopted a secular state formation. Besides Islam, Turkic identity has an important role as a supra-national identity in Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkmenistan.

Kazakhstan is the largest state among Central Asian countries. It has relatively low population. Total population is 15.3 million and composed of 59 percent Kazaks, 26 percent Russians, and 3 percent Ukrainians (http://en.wikipedia.org/wiki/Kazakhstan#Population). Highest proportion of Russian minority lives in Kazakhstan. During the Soviet period Russians were majority in Kazakhstan. Among Kazaks, power struggle traditionally exist between tribes and tribal confederation is based on three hordes. Like in Kazakhstan, people in Kyrgyzstan are traditionally nomadic. Total population of the country is 5.2 million (The World Almanac 2005 estimation) and composed of 70 percent Kyrgyz, 9 percent Russians, and 15 percent Uzbeks (http://en.wikipedia.org/wiki/Kyrgyzstan#Demographics). Sub-national clan system of Kyrgyzstan is called as wings and there are three wings to which each Kyrgyz belongs to. Uzbeks are traditionally settled and Uzbekistan has a kind of leading position in the region. Uzbekistan is the most crowded country of Central Asia. Furthermore a large number of Uzbek minorities lives in other Central Asian countries. Total population of the country is 26 million (http://www.unescap.org/stat/data/apif/uzbekistan_apif2004.pdf estimation for 2003) and composed of 80 percent Uzbeks, 6 percent Russians, 5 percent Tajik, 3 percent Kazaks, and 2,5 percent Karakalpaks according to

the CIA World Factbook (https://www.cia.gov/library/publications/the-world-factbook/geos/uz.html)[8].

Mother tongue is an important representation and determiner of the ethnic groups in Central Asia. Although none of the languages was state or official language during the Soviet period, Russian has de facto superiority in political, economical, and scientific spheres especially among elites. Therefore some official changes in the issue of language were performed even before the independence. Before the collapse of the Soviet Union in the period of 1989-1990 the law "On State Language" was adopted in former Soviet Central Asian countries (Schlyter, 1998; Smith, 1998). This new law made Uzbek language state language while made Russian the language of inter-ethnic communication. The language law in Uzbekistan was revised in December 1995. 1989 Law aimed to de-Russify Uzbek elites by promoting Uzbek language. It was not only a simple shift in language policy but also redistribution of cultural and political power based on ethnicity. Russian has no longer special significance as language of inter-ethnic communication in Uzbekistan according to the 1995 Law. On the other hand status of Russian has been upgraded in Kazakhstan as official language and in Kyrgyzstan as official language in Russian dominated areas since 1995. Another significant discussion on the issue of language is script in Central Asia. In 1928-29 the Arabic script was changed with the Latin; then the Latin was replaced with the Cyrillic in 1939-40. At last the Cyrillic was replaced with the Latin in 1993 by promising to make necessary change till 2000. On the other hand this deadline extended due to practical reasons in Kazakhstan and Kyrgyz Republic. There are plans to shift to Latin in both countries (http://en.wikipedia.org/wiki/Kyrgyz_language, http://en.wikipedia.org/wiki/Kazakh_language). Uzbeks transferred to the Latin script in education, currency and bureaucracy in spite of the common use of Cyrillic in some fields (http://en.wikipedia.org/wiki/Uzbek_language). While Russians in Central Asia define themselves different than their co-

[8] Uzbeks and Tajiks traditionally live in common social, cultural, and environmental area. Self-identification was not based on ethnicity but region, neighborhood, or family/tribe before Soviet era. Uzbek-Tajik marriages are

ethnics in Russia, Russians and natives have traditionally lived isolated. In all Central Asian republics, Russians are more educated, better skilled, and historically higher status comparing titular (for example, Russian-language schools have higher standard). Second version of Language Law aimed to reduce not only the status of Russian language but also the domination of Russians and Russian culture in particular spheres. Therefore both mother tongue and the language of communication are important indicators of the cultural formation.

Cultural formation and its ethnic roots in Turkey are very much related with the socio-political history of the country. Anatolia, or in other words Asia Minor, is one of the earliest places of human habitation. Similar with the Central Asian land, land of Turkey is on the important ways of economic and cultural transition. The land is located as a bridge between the continents of Europe and Asia. Long history of the Ottoman Empire ended with the First World War and Republic of Turkey was established in 1923 following the Independence War. State formation in Turkey is basically secular and national oriented. In spite of the secular state formation regional identity is important in social and cultural life. Islam is a unifying identity among Turks and Kurds since both of them are predominantly Muslim. Nation-state formation is based on Turkish nationality and this process suppressed the particularities of Kurdish identity. In this process, all Muslim groups were melted in the *same pot*, i.e. Turk. In this context, Kurdish language and culture dominantly represented in private sphere (İçduygu et. al. 1999; Smits and Hoşgör, 2003). In spite of the long history in the same territory a great majority of Kurds and Turks keep endogamy within their own ethnic groups. Although residential segregation between Turks and Kurds has been decreasing in the last two decades, there is no significant increase in mixed marriages between Turks and Kurds (Koç, et. al. 1999). Therefore cultural particularities of the each ethnic group are transferred through marriage and family (Hoşgör and Smits, 2002).

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frequent. Some of the ethnic Tajiks are officially registered as Uzbek. Therefore Tajiks suppose their share in the total population is underestimated and actually 15% of Uzbekistan population is Tajiks.

After 1980s, discussion of Kurdish identity has become popular in political and public spheres. Kurdish language has received priority in the identity building process in contemporary era. Mother tongue retention and representation of different ethnic languages in private and public life are encouraged mostly by Kurds. Although Turkish is the official language in Turkey, several official modifications towards the advantage of Kurdish are accepted in the issue of language since 2002 related with National Programme for European Union's Accession Criteria. The estimated population of Turkey in 2006 is 73 million and composed of 83 percent Turks and 15 percent Kurds.

In accordance with the historical relation between ethnicity and culture in the selected countries, cultural diversity is considered together with cultural belonging dominated by ethnicity and it is called as ethno-cultural groups in this thesis. In this context ethno-cultural refers to cultural formation primarily based on ethnicity. Ethnicity is supported by religion and cultural transformation is controlled by language of communication.

Ethno-cultural groups are formed regarding historical/tradition ties symbolized with mother tongue, ethnicity and religion and functional/dynamic ties indicated with language of communication. This taxonomy is further than ethnic categorisation since ethnicity is used as a cultural separator which is represented by mother tongue and is powered by religion. Furthermore ethno-cultural groups are not stable but dynamic features. A shift from a mother tongue to another language for communication is used as an indicator of cultural assimilation/integration in this thesis. Other studies confirm that fertility behaviour of different ethnic groups in a country getting similar with increasing assimilation/integration (Dudley et. al. 2006). This transformation process in studied countries, either assimilation or integration has resulted in a differentiation in the demographic processes particularly in the mechanism of fertility control.

III. III Formation of ethno-cultural groups

Table III.1 represents the variables which are employed for the formation of ethno-cultural groups by countries. Table II.1, Table II.2, Table II.3, and Table II.4 in Appendix II show features of components of ethno-cultural groups respectively for Kazakhstan, Kyrgyzstan, Uzbekistan, and Turkey. These tables also include the share of sub-groups in each country.

All four countries are multilingual but not all languages in each country satisfy quantity for such an analysis. Distribution of women by their mother tongue is presented in tables in Appendix III. Two most common languages are the subjects of this study in each country; first one is the titular language of each country which is also most common for all four countries and second one is Russian for Central Asian cases and Kurdish for Turkey. All other languages are classified in the name of *other*.

Different variables are used for composing ethno-cultural groups regarding particular necessities in each countries and data limitation. All four survey data included detailed variables about mother tongue and language of communication. TDHS-2003 has the most detailed information about mother tongue. Besides the informant's and informant's husband's mother tongue, data are also collected on her and husband's parents' mother tongue.

In the case of Turkey, informants' and her husband's mother tongue are cross-checked with her and his parents' mother tongue. These analyses represent high correspondence between individual and her/his mother tongue (Table III.1, Table III.2, Table III.3, Table III.4, Table III.5, and Table III.6, Appendix III). Regarding the results of cross check, women's and her husbands' mother tongue is used in the formation of ethno-cultural groups.

Religion and ethnicity are significant proxies of ethno-cultural belonging. Data on ethnicity and religion are available in survey data except TDHS-2003. In the cases of Central Asian countries, religion is necessary to determine different ethno-cultural groups. Titular populations of all four countries are

predominantly Muslim while Russians are Orthodox. On the other hand religion is not a significant determinant for ethnicity in Turkey since both Turks and Kurds are predominantly Muslim. Data collected on religion in TDHS-1998 show that almost of Turkish and Kurdish speaking groups belong to Islam (95 percent and 97 percent respectively).

Referring the functional tie, two questions are employed to construct ethno-cultural groups, *language of interview* and *language used between spouses*. The former one is available for all countries but the latter one is available only for TDHS-2003 and KRDHS-1997. The aim of employing a variable for functional tie is to reflect language preference for daily use of respondent. Therefore language of interview is a strong variable only if interviews can be fluently conducted in both languages. In other words, if the interviewers are bilingual respondents choose the language of interview but otherwise interviewers push the respondents to use the dominant language. In the case of Turkey, only few interviewers can speak Kurdish so the language of interview does not depend on the preference of respondents. Interviews are conducted in Kurdish only if respondents cannot speak any Turkish. Moreover four fifth of Kurdish interviews were conducted by the help of translator. Considering field operation, language used between spouses is stronger and more reliable source to determine the most influential language for TDHS-2003. In Central Asian surveys bilingual interviewers were employed so language of interview is a quite powerful indicator to determine the most functional and the most influential language (Table III.15, Table III.22, Table III.28; Appendix III). Furthermore use of translator is very limited for Central Asian surveys. For example in the case of Kazakhstan, less than one percent of the ever-married women interviews (both in Kazak and Russian) were done by the help of translator. In order to check consistency between language of interview and language used between spouses, two versions of ethno-cultural categories are constructed by KRDHS-1997. Results show that there is no statistically significant difference in percent distribution of each category between two versions (Table III.23A, Table III.23B; Appendix III).

Regarding traditional/historical and functional/influential ties of language, three ethno-cultural categories are constructed for each country. First group represents people of titular languages, Kazakh, Kyrgyz, Turkish, and Uzbek; second group represents people of second common languages, Russian for Central Asian countries and Kurdish for Turkey and third group represents Turkish speaking Kurds and Russian speaking Kazakhs, Kyrgyz, and Uzbeks. Detailed forms of composition of those three groups for each country are given in Table II.1, Table II.2, Table II.3, and Table II.4 in Appendix II.

Table III.1 Basic components used for formation of ethno-cultural group by countries and surveys

Variables referring historical/traditional tie	Variables referring functional tie
TDHS-2003 • Mother tongue • Husband's mother tongue • Mother tongue of women's parents[9] Mother tongue of husband's parents[1]	TDHS-2003 Language used between spouses
KDHS-1999 • Mother tongue • Ethnicity • Religion	KDHS-1999 Language of interview
KRDHS-1997 • Mother tongue • Ethnicity • Religion	KRDHS-1997 Spoken language at home
UHES-2002 • Mother tongue • Ethnicity • Religion	UHES-2002 Language of interview

[9] Mother tongue of women's parents and husband's parents were reduced from the set of variables explaining historical/traditional tie as the consequence of high correspondence between individual and her/his mother tongue.

IV. LITERATURE REVIEW

In Turkey and Central Asian countries, abortion and contraception as the long-term hot issues of demography have been touched by several authors. Basic literature is summarized with a particular emphasis on their theoretical framework in this part and others are referred in bibliography.

World review of abortion with the intention of summarizing rates, abortion policy, and significance of the issue, are very useful. The Population Council published abortion fact books between 1973 and 1983. Then in 1986, 6th edition of world review published by the Alan Guttmacher Institude (AGI) and the recent one of the series is titled Sharing Responsibility: Woman, Society, and Abortion Worldwide (AGI, 1999). This edition is very much influenced by priorities of ICPD and therefore abortion is addressed as not only a reproductive right but also social and spousal responsibility. The further report of the AGI by Boonstra et. al. (2006), Abortion in Women's Lives, is concentrated on the recommendations for policies and programs mainly in United States.

Earlier studies primarily aimed to evaluate effect of abortion in fertility transition by estimating level of abortion and contraceptive prevalence. Bongaarts (1978) refers both issues as proximate determinant of fertility in his famous work and his approach is being employed in numerous studies. One of them was employed by Hancıoğlu (1997) in the case of Turkey as a part of the further analysis of 1993 Demographic and Health Survey. Bongaaart's approach was employed for two purposes in this study; adjust fertility rates, and decompose the effect of proximate determinants. According to analysis for period 1983-1993, relative contribution of contraception and abortion has increased both in regional and national level[10] (Hancıoğlu, 1997).

[10] Respectively from 52 to 55 percent and 7 to 10 percent in national level.

Studies aiming to evaluate trade off between abortion and contraception are popular in demography literature. Major recent studies are policy oriented. Bongaarts and Westoff (2000) present a model linking the potential role of increases in the level of contraceptive prevalence and effectiveness in reducing abortion rates. According to the model, direct determinants of abortion are desired number of children and preferred birth interval, prevalence and effectiveness of contraceptive practice to implement these preference, and probability of undergoing an abortion to avoid unintended births when contraceptive failed or not used. Analytical framework of that study relates proportion of reproductive years during which contraceptive practiced and total abortion rate (TAR) with total fertility rate (TFR). It is claimed that level of abortion averted by an increase of 10% point in contraceptive prevalence directly results in a decrease of abortion probability.

After the dissolution of the Soviet Union, studies on uniqueness and differentiation of demographic characteristics of the region have become popular. The study by Westoff (2000) on Kazakhstan aims to document the continuing substitution of contraception for abortion in Kazakhstan. Four basic background characteristics; type of place of residence, region, education, and ethnicity are correlated with three measures of abortion; percentage of pregnancies that ended in abortion, percentage of women who ever had abortion, and total abortion rate. Strong positive association is underlined between whether the woman has ever used contraception and abortion plausible due to strong motivation to avoid pregnancy and high failure rate. Contribution of users and non-users of contraception to the abortion rate and, contributions to the abortion rate of contraceptive failure, discontinuation, and other non-use are constructed as models in the study.

An earlier study of Westoff et. al. (1998) aims to demonstrate replacement of abortion by contraceptive use in three Central Asian Republics; Kazakhstan, Kyrgyzstan, and Uzbekistan. DHS data and information collected by ministries of health were used for analysis in the report. With the aim of discussing alternative position of abortion and

contraception, an additional set of questions are added in Kyrgyzstan Survey. Method to forecast abortion rate is based on the question that how much the abortion rate could be reduced by specific increases in the proportion of women using contraception. Method users and nonusers separately categorized in terms of their different position to become unintentionally pregnant. In the report, relation between abortion and pregnancy order, and use of contraception before and after abortion are analyzed.

Agadjanian (1999, and 2002) has developed an alternative approach for studying abortion and contraception. Two of his papers on Kazakhstan are critical for our purpose. He mentioned that socio demographic, cultural, and abortion related characteristic are linked with abortion ratio. Effect of ethno-cultural difference and particular effect of russification on the probability of having an abortion are analyzed. Significance of ethno-cultural difference on the time interval between first intercourse to abortion is evaluated. Basic hypothesis of the study is that russification is a gradual process which affects reproductive behavior. Reproductive behavior of russified Kazaks is more similar to that of Europeans but not same. Analyses show that russification has a stronger effect on the abortion than contraception. Women who are more likely to have abortion are also likely to practice contraception. Reason of gradual decline (even increase among sub-groups) in abortion ratio despite the increasing contraceptive supply in the region is explained by replacement of medical method with non-medical ones rather than non-use (Agadjanian and Qian, 1997).

A later work of Agadjanian (1999) aims to analyze change in marital and fertility behavior in Kazakhstan after the collapse of the Soviet Union for indigenous and European population of the country. Agadjanian refers to literature on relationship between minority group status and demographic behaviour and summarize the theory as “socially disadvantaged ethnic, religious, and other minorities adjust their reproductive behaviour to maximize their security and/or social mobility”. In contrast to predictions, after the collapse of the Union age at first marriage among European origins

has decreased. On the contrary age at first birth, that means interval between first marriage and birth, has increased. Because both use of contraception and abortion are higher among Europeans than indigenous population. Least square regression and proportional hazard model are employed for analysis. Abortion measured as abortion ration, number of abortion per total pregnancy. Paper suggests that meaning of marriage is different for Europeans and indigenous population. Therefore, in contrast to indigenous population, childbearing is not primary goal of marriage for Europeans.

In his further study Agadjanian (2002) criticized straightforward assumptions about replacement of contraception with abortion since similar attitudes toward both issues is observed. He points out abortion rates were lower among non-European, especially Central Asian, women and a parallel differentiation exists within countries between indigenous and others. The model of Bongaart's and Westoff, (2000) on tradeoff between contraception and abortion is assessed. Then Agadjanian mentions that analysis of supply is not enough to discuss replacement between contraception and abortion but the difference in the demand must be examined. The study is based on KDHS-95 and KDHS-99. Ethnic difference is grouped into three categories; Europeans, non-Russified Kazaks, and Russified Kazaks. Besides the ethnicity, model includes a group of variables such as age, parity, education. Each model also controls for respondent's contraception and abortion experience. Significant reduction is observed in total abortion rate but almost all of this reduction is among Europeans. Country wide total abortion rate can be assumed as an evidence of replacement of medical contraception with abortion but total abortion rates of each ethno-cultural group are not sufficient enough accepting this replacement at ethno-cultural group level. The remarkable increase in contraception is experienced among non-Russified Kazaks who also have stable level of induced abortion in the reference period. Respondents' attitudes toward abortion are also analyzed in this study. Higher proportion of non-Russified Kazaks disapproves abortion and Europeans are more likely to approve the issue. Regardless of ethnicity, younger women are less likely to approve abortion.

A recent study by Marston and Cleland (2004) discusses the relation between contraceptive use and abortion levels. Both are represented as obviously alternative means for achieving desired fertility level. Paper also discusses the reason of parallel increase in contraceptive prevalence and induced abortion incidence as follows: before transition both desired and achieved fertility were high. In the first phase of the transition since people who like to limit their fertility increases and society is far from perfect contraceptive ones, risk of unwanted pregnancy also increases. In societies in transition both contraception and induced abortion increase. At the beginning of discussion of the hypothesis, recently published articles were summarized. Then change in the level of contraception and abortion is analyzed for 11 countries which have adequate data on both issues. Many countries have not experienced inverse relation between the level of contraception and induced abortion. This simultaneous increase is explained by fertility preference and TFR in those countries. Contraceptive supply does not adequately match people's desire for small family. It is proposed that "eventually abortion should be replaced by contraception if levels of the latter continue to rise and fertility remains stable". This simultaneity is addressed to fertility transition in those countries. For Denmark, U.S., and Netherlands rise in contraception and abortion followed by decline in abortion rates. In the conclusion of the paper it is said that "if other factors are constant, a rise in contraceptive use or effectiveness must lead to a decline in induced abortion or vice versa".

Fertility is the overwhelming subject in demographic studies in Turkey. Not surprisingly, majority of surveys and analysis are directed to abortion and contraceptive use. Due to lack of representative registration, demographic surveys are the main data source for studying on contraception and abortion. Both issues are one of the main concerns of recent demographic and health surveys of Turkey (HIPS, et. al. 2004; HIPS, et. al. 1999; HIPS, et. al. 1994). In addition to main reports of these surveys, further analyses are employed to understand dynamics of abortion and contraception. One of them aims to make detailed analysis on induced abortion based on 1993 Turkey Demographic and Health Survey by

multivariate analysis (Akın and Bertan, 1996). Number of induced abortion, time of induced abortion (duration of pregnancy before abortion), contraception before and after abortion are examined. Age, education of woman and her husband, region, age at first marriage, first contraceptive method, attitudes (of woman and her husband) toward abortion, fertility preference, parity are the main variables in the analysis. Using the same approach, further analysis is done based on 1998 Turkey Demographic and Health Survey (Akın and Enünlü, 2002).

Another study is aiming to decompose the various effects of contraception in recent reduction in the level of abortion rates in Turkey (Senlet et al., 2001b). This paper briefly summarized the legalization process of induced abortion and fertility control in Turkey. The study is based on TDHS-93, and TDHS-98. The relationship between contraceptive use and abortion is the main concern of the study. According to the conceptual framework of the study, factors affecting a decline in induced abortion are followings: decline in unintended pregnancies (directly related with decline in contraception failure rate, increased use of modern contraceptive methods, and increased desire for children) and decline in propensity to abort unintended pregnancies. The shift from traditional methods to modern ones, a significant decline in the traditional method failure rate, and the decline in proportion of unintended pregnancies resulting from traditional failure that are aborted are the major factors affecting decline in abortion and the last factor has the most significant effect in the case of Turkey in 1988-1998. The reasons behind these factors were not analyzed in the report but only some possibilities were underlined and the program implications were highlighted.

Gürsoy (1996) discussed historical, international, and cultural background of legalization of induced abortion in Turkey. Abortion is considered as a decision made by state, family, and individual. Conceptualization of abortion and contraception by different sects and regions of Islam is also summarized in the paper. It is underlined that duration of pregnancy and acceptable reasons for abortion are significant

for each case. Lack of public discussion and women's demand for reproductive rights in legalization process is also emphasized in the paper. Gürsoy points out that, population growth recognized as a not an individual but a social problem in Turkey. She also argues that women's reproduction was assumed as part of nation building process. Due to universality of marriage among women and few births out of marriage, reproductive decision making process is taking place in family. In order to examine legalization of abortion in the liberation context of Turkey, differentiation in legal framework in early Republican period is summarized.

Because of high abortion rates, issue has attracted attention for graduate studies in Turkey. Altun (1995) tried to analyze socio-economic characteristics of women who experienced induced abortion using 1988 Turkey Fertility and Health Survey. In her thesis, brief history of induced abortion with a special emphasis on its legal status was drawn for both national and international level. According to her conclusions induced abortion is common and gradually increased in Turkey. Abortion trend increases for women who are employed outside of home and agriculture. Induced abortion was used primarily for limiting purpose. Women who use any kind of contraceptive method are more likely to use induced abortion than the nonusers. Due to this reason author emphasises that induced abortion is a last chance rather than an alternative to contraception. An earlier study was done by Akadlı (1985) based on 1978 Turkey Fertility Survey. Level of abortion was calculated by type of place of resident and origin of women.

Induced abortion was an important issue for social and medical scientists while it was illegal in Turkey. In that period when performance of abortion was known but the amount was unidentified, number of abortion practice was highly underestimated. Due to this fact some studies aims to correct those underestimated findings. With this motivation, Tezcan and Omran (1981) used randomized response technique (RRT) to estimate abortion prevalence. Then they compared the finding of RRT and direct

questioning (DQ). They confirmed that RRT reduces (or corrects) underreporting of abortion.

Although quantitative surveys are privileged in the field of abortion and contraception in demography, recently there are a few qualitative studies. One of them is focus group discussion in Kazakhstan, Turkmenistan, Kyrgyzstan, and Uzbekistan on the perception of family planning and reproductive health issues (Storey, et. al., 1997). Abortion is not the core concern of the focus group discussions but findings are summarized under sub-titles. General view is that abortion is rejected due to moral and health concerns while it is accepted due to practical reasons.

More recent qualitative study on contraception and abortion was implemented in Turkey by in-depth interviews (Bozbeyoğlu et. al., 2003). Detailed analysis of the meaning and the reasons of abortion were done based on interviews. Contraceptive use before and after abortion is also discussed. 65 women are interviewed, 49 of them are ever-married, and 13 of them ever used abortion. Survey results show that besides the legal status, abortion is not accepted as a regular method of contraception by women but rather a last choice. Religious belief, attitudes of family and social groups are very much effective on woman's attitude toward abortion. Almost for all, abortion is acceptable in particular circumstances. The reason of abortion is actually explanation of those particular circumstances. Experience of unintended pregnancy seems a determiner for attitudes and further decisions.

Central Asian Republics attracted more attention with their distinctive demographic features than the rest of the Union. Anichkin and Vishnevsky (1994) supposed that three different stages of fertility transition were valid in the Soviet Union at the same time. While discussing probability to pass to post-transitional stage for Central Asia, they highlighted that horizontal cultural differences such as Islam in Central Asia are "non-transient" characteristics. Significance of the ethnic and linguistic variation rather than administrative boundaries in former-Soviet Union was underlined

(Darsky, 1994; Lutz and Scherbov, 1994). Coale (1994) also mentions the relation between fertility and ethnicity/nationality with a reference to the Princeton European Fertility Project. There is a negative correlation between proportion of “western non-Russia” population and fertility while there is positive correlation between “Eastern non-Russia” population and fertility. Coale compared Soviet Republics with their non-Union neighboring countries in terms of changes in nuptiality and fertility. In this context, three parts of the Union are compared the non-Union ones; the Baltic Republics with Scandinavia, non-Baltic Republics with Eastern European countries, and Central Asian Republics with China. Based on these findings, Coale argues that similarities of the neighboring countries, besides the borders and varying socio-economic structure, are the consequences of common features of their language, tradition, and religion.

Avdeev (1994) analyzed abortion and contraception and find out the reasons of stabilization of abortion in 1980s and predict future trends in abortion and contraception. He called liberal abortion policy versus limited supply of contraception as the Soviet Union type family planning experience. After 1960s health planners in the Soviet Union were concerned about high prevalence of abortion, and contraceptive use was promoted but individual decision making processes were different than that global affair. He underlines that reality as following “the main problem within a family was how to avoid unwanted childbearing, and if contraception was not 100 percent effective the motivation to use it was very low” (Avdeev, 1994). The level of abortion is related with other demographic factors such as women at reproductive age, proportion married, age distribution of contraception, and contraceptive prevalence rate. He employed proximate determinants of fertility model of Bongaarts for estimating impact of abortion and contraception on fertility level in republics of the Union. Proximate determinants of fertility, relative impact of the determinants, relative impact of abortion and contraception were calculated in the Soviet Union and the republics for years 1985-86. He emphasizes on replacing medical contraceptives with non-medical ones rather than induced abortion. He also

mentions that level of abortion has not significantly changed besides increasing effectiveness of contraceptive methods.

Barbieri et. al (1996) underlines the significance but ignorance of population studies of Soviet Central Asia in literature. Brief history of population history and policies in Uzbekistan in the paper highlights the difference in demographic characteristics of Central Asian countries especially Uzbekistan within the Union. Author suggests that legalization of abortion in 1955 has important role in fertility reduction. In the Union, sterilization was illegal and pill had negative connotations. Reason of difference between generations in children ever born is analyzed by hazard analysis. Analysis show that in spite of pro-natalist population policy and lack of national family planning program of the Union, social development program of the Soviet government stimulated fertility transition in the Union. According to the study, women's education appears as the main factor in fertility reduction. During the 1970s, Uzbek government tried to build measures to promote contraceptives rather than abortion with medical concern.

Central Asian countries receive attention due to their political transformation in the Soviet period. Lewis evaluates characteristics of population in Central Asia with a special emphasis on the developments in terms of urbanization, education, and production in 1920-1970 period.

The study of Smith, et. al. (1998) is significant in terms of conceptualization of ethno-cultural belonging in this thesis in the cases of Central Asian States. Paper reviews the changes in the language policies following the collapse of the Soviet Union. Moreover, paper discusses the importance of language in nation building process in the region both for government and individual levels. Naby (1994) also discusses the role of ethnic and religious factors in state building process in Central Asia.

Features of Central Asian countries attracted attention of social scientists in Turkey as well. A study about countries in the region related

with the emphasis of this dissertation is performed by Aray (1999). Aray analyses the demographic and ethnic composition of the Central Asian countries considering their geographical, historical, cultural, social and economic characteristics.

Literature on demand and supply sided approach in fertility reduction is also necessary especially for theoretical structure of this thesis. Cleland and Wilson (1987) suggest that unquestioned explanation of reduced parental demand for children is the changing balance between costs and benefits of childbearing in conventional demography literature. They mention that aggregate connections between socio-economic and demographic development clearly exist but local and individual experiences are more difficult to explain. Demand theory approach is based on fertility-branch of the theory of consumer choice. They argue that economic theories are not sufficient enough to explain fertility trends in last 100 years. The aim of the paper is to assess implications of both historical and contemporary data in reproductive change. Change in maternal fertility is taken into account but not the role of nuptiality. Authors introduced the Coale's (1973) three conditions of fertility reduction for better understanding the demand theory. Authors mentioned that theoretical discussions are concentrated about the last condition of Coale (reduced fertility must be perceived to be advantageous). They referred Thompson (1929), Davis (1945), and Notestein's (1945) classical transition theory, Becker's micro-economic approache, demand theory, Leibenstein (1974 and 1975) and Easterlin's (1975) combination of economic decision making process with social and biological constrains and Caldwell's (1982) theory of intergenerational wealth flow. According the authors, the main concern of the other two conditions of Coale (fertility must be within calculus of conscious choice and effective techniques of fertility reduction must be known and available) is means of control but they were undermined in the demographic literature. They are based on structural modernization and diffusion of innovations theories.

Ginneken and Razzaque (2003) do a case study about supply and demand factors in the fertility decline. Authors underline the significance of demand perspective in explaining fertility decline in Bangladesh. Family planning program addressed as supply factor while socio-economic status, norms and attitudes towards family size are labelled as demand factors. They refer to Davis (1969), Hernandez (1981), and Caldwell et al. (1999) paper for importance of demand factors. Three groups of factors, underlying, intermediate psycho-social, and proximate determinants of theoretical framework developed by Freedman (1987) used for analysis. Data from vital registration system and KAP surveys were employed for analysis. Multiple Classification Analysis was used for multivariate analysis. Results show and authors conclude that not only family planning program as supply factor but also demand factors have importance in fertility reduction. Another case study in Bangladesh on supply and demand factor is done by Merrick (1993). Paper evaluates the supply and demand side of fertility regulation with a policy perspective. Merrick criticizes supply versus demand approaches and underlines the significance of dynamic relation between supply and demand for contraception. He makes a particular emphasis on Bangladesh family planning program experience and generally comments on other developing countries' fertility reduction program based on WFS, and DHS. He mentions that supply of contraceptive methods is ineffective without any demand of them and visa versa.

Last but not least, literature on cultural approach in demography is fundamental in the background of this thesis. Fricke (1997) mentions that descriptive analysis and reductive economic explanation have been mainly used in demography since the formation of the discipline. Fricke argues that this tendency causes an epistemological crisis in demography. He discusses and composes demography within cultural theories as a potential solution of this crisis. Conventional categories are very broad in the discipline and the position of demography should be revised within larger social theory. He underlines that "cultural patterns provide a necessary context for understanding meaning and motivation". Therefore a mature

understanding of demographic action could be in its social and cultural context.

Kertzer (1997) also criticizes the underestimation of the role of culture in demographic analysis. He suggests that since most of the demographic models assume that same social and/or economic characteristics resulted in same demographic behaviour, culture became “error” in a typical demographic model. Author thinks that redundant reliance on rationality of humans in their reproductive behavior causes an eradication of the role of culture. He addressed approaches of Lesthaeghe (1991) and Caldwell (1976) for problem of taking culture into account in explaining demographic behaviour. *Add-culture-mix* approach of Handwerker (1986), *culture for people-culture by people* approach of Hammel (1990), and *culture does not belong on the list of variables* approach of Greenhalgh (1988) are critical approaches in his discussion. Hammel (1990) also detailed relation between culture and demography in his famous article “a theory of culture for demography”.

There is limited but useful literature which follows the cultural theory. These studies are far from developing models based on cultural variation but at least, they do not ignore culture in demographic analysis. One of them is by Remennick and Segal (2001). Paper compared post-abortion experiences of Israeli women and recent (Israeli-Russian) immigrants from Russia in a cross-cultural perspective. Paper stresses on the significance of social context which women used building their identity in the variation of emotional reaction. Study is a good example of the various consequences of different social formation in spite of the effect of same religious background.

Dillon (1996), discusses the cultural themes against abortion used by Catholic Church in Ireland, Poland, the U.S. and England & Wales. Study shows that the Church uses cultural sources rather than doctrinal sources in order to legitimize its universal opposition to abortion. Shared national

cultural identity is also employed for legitimizing strategy in the U.S. and Poland but not in Ireland and England & Wales.

Wilcox (1992) debates the differences in the attitude towards abortion in cases of African Americans and whites. Articles concentrated on cross relation between race, religion, and region with a particular emphasis on the role of religious characteristics in accounting for racial differences. The results of the study show that religiosity and doctrinal orthodoxy are significant determinants of abortion attitudes among blacks and whites. Furthermore religiosity explains much of the racial differences of abortion attitudes. Religion has greater impact on the attitudes of whites than blacks. On the other hand region is not a necessary predictor in these attitudes.

Dudley et. al (2006), aim to investigate the best explaining hypothesis for ethnical difference in fertility level in China. The four studied approaches in the article are the sub-cultural hypothesis, the social characteristics hypothesis, the minority group hypothesis, and the economic hypothesis. Out of approximately 55 ethnical groups, the Han majority and eight minority groups are the subject of the study. Most of the minority groups have higher level of fertility as compared to the Han majority while there are few groups with lower level of fertility in China. In the case of China ethnic differentiation is mostly based on cultural and linguistic variation rather than physical and anthropometric differences. Principal criteria of being minority are borrowed from Bean & Tiende (1987) in this study. These criteria have three points to focus; size of the group, self-awareness of the group members, discrimination from majority. The social characteristics hypothesis argues that the variation in the level of fertility between majority and minority groups is rooted from the differences between groups in term of their socio-economic characteristics which affect fertility. The minority groups are getting more likely the majority group in the level of fertility with increasing assimilation (just like the reproductive behaviour of Russian speaking Kazaks, Kyrgyz, Uzbeks and Turkish speaking Kurds). On the other hand sub-cultural hypothesis suggests that difference in the fertility behaviour exist even after controlling socio-economic characteristics of majority and

minority groups. This variation is primarily based on cultural norms and policies. The minority group status hypothesis underlines that the socio-economic status of the minority group determines the direction of the difference in the level of fertility between minority and majority groups (fertility behaviour of Russians in Central Asia can be an example for this situation). Economic factors hypothesis emphasizes the opportunity cost of a child for women. This cost differs between ethnic groups therefore women from different ethnic groups even they all do no work outside home, have different level of fertility. On the other hand their fertility behaviour is getting similar with decreasing differences in their potential obtaining income. In the study, policy effect in the fertility difference between minority and majority groups in China appears as the key factor and the explanation of the variation is fitted best by sub-cultural hypothesis.

For historical perspective, Riddle's (1994) book titled "Contraception and Abortion from Ancient World to Renaissance" is an useful guide that examines historical development of the issue from classical and medieval medical records. Practices of different cultures are gotten together in the book.

CHAPTER V SOURCE OF DATA AND METHODOLOGY

V. 1 Source of Data

Comprehensive and reliable source of data, which fits the particular interest of the studied topic, is the basic prerequisite of the demographic analysis. The conventional data sources of demography are population census, registration, and population survey. These sources have individual advantages and limitation which affect their preference for an analysis. Moreover availability and reliability of these sources of population studies are varying for different countries' settings. Their relative benefit can be summarized as censuses covering all population, registration system providing up-to-date information, and surveys presenting detailed information on special topics. Therefore, generally, sample surveys are more efficient tools to collect data on more specialized topics such as abortion and contraception. When particular interests of this thesis are considered, it will be useful to overview availability and convenience of the different sources of data in the studied countries.

The region which includes the countries under study has quite long history in census taking. Kazakhstan, Kyrgyzstan, and Uzbekistan were covered during the first all-Union census in 1926. Censuses in 1937, 1939, 1959, 1970, and 1979 followed the first census in the Union. After the last all-Union census in 1989, first independent census was carried out in 1999 in Kazakhstan and Kyrgyzstan but not in Uzbekistan. In the case of Turkey, censuses, following the first one in 1927, were conducted on a quinquennial basis till 1990. Then census period has been extended to 10 years and the last census was in 2000. Regarding the concern of this thesis, it is seen that abortion and contraceptive behaviour are too specific topics to collect data through population censuses. Therefore census data has not been preferred for the analysis of this thesis.

The second source of demographic data, registration, contains some data about abortion practice and contraceptive use. But registration data for

the studied countries has problems of coverage which cannot be overlooked. Registration system of Central Asian countries had fallen down after 1991 following the collapse of the Soviet Union whereas civil registration system for Turkey had never been well-established. Particular emphasis on abortion registration shows that the share of private health facilities for abortion practice has been growing since the collapse of the Union, while it is traditionally high in Turkey. On the other hand recent registration of abortion is primarily based on facilities of public health sector in those countries. Therefore, opposite to the increasing share of private sector in abortion services, coverage of abortion registration decreased in the region.

Turkey has a rather long history of demographic surveys. As being a country with not well-established registration system, Turkey fulfils data necessity with national sample surveys. Following the first national demographic survey in 1963, sample surveys has become the primary source of demographic analysis. 1963 Turkey Knowledge, Attitude, and Practice Survey was implemented by School of Public Health. It was a part of Knowledge-Attitude-Practice (KAP) surveys which were conducted in 20 countries in between 1960-1966. Starting from 1968 Social Survey on Family Structure and Population Problems nationally representative demographic surveys have been conducted on a quinquennial basis by Hacettepe University Institute of Population Studies. 1968 Survey is followed by 1973 Turkish Population Structure and Population Problems Survey. 1978 Turkish Fertility Survey was carried out in collobation with World Fertility Survey Program while 1983 Turkish Fertility, Contraceptive Prevalence and Family Health Status Survey was very much influenced by Contraceptive Prevalence Survey (CPS) Program. After 1988 Turkish Population and Health Survey, the last three surveys, in 1993, 1998, and 2003, were conducted within the Demographic and Health Survey (DHS) program.

Central Asian countries have been in need of survey data after independence. The first DHS was carried out in Kazakhstan in 1995 by National Institute of Nutrition. Then Demographic and Health Surveys have

been spread out the region by mid-90s. In the last decade, Uzbekistan DHS 1996 by Institute of Obstetrics & Gynectics and Ministry of Health, Kyrgyzstan DHS 1997 by Institute of Obstetrics & Pediatrics and Ministry of Health, Kazakhstan DHS 1999 by Academy of Preventive Medicine, and Uzbekistan HES[11] 2002 by Analytical and Information Center of the Ministry of Health of Uzbekistan and National Department of Statistics of Uzbekistan were implemented[12]. For contemporary national and international demographic studies, primarily DHS results are employed for the region. Other then DHS, World Health Survey was carried out in Kazakhstan in 2002, and Multiple Clusters Indicator Survey (MICS 2) was carried out in Uzbekistan in 2000.

Among primary data sources of demographic studies; census, registration, and survey; the last one is the convenient tool for the analysis of abortion practice and contraceptive use for due to above mentioned limitations of census and registration data. One of the major goals of surveys in reproductive health is to meet data supply in this kind of particular interests. Contemporary data pool gain from the national sample surveys in the studied countries addresses DHS data for the analysis of this thesis. Sample surveys conducted under DHS program provide not only reliable but also comparable data on fertility regulation for studied countries. Those surveys also involve background information of the respondent that make a study on ethno-cultural dimensions of fertility regulation possible. Kazakhstan DHS 1999, Kyrgyzstan DHS 1997, Uzbekistan HES 2002, Turkey DHS 2003 are the primary data source for the analyses while Kazakhstan DHS, 1995, Uzbekistan DHS 1996, and Turkey DHS 1998 are employed for some comparisons.

The Demographic and Health Surveys program is initially established at The Institute for Resource Development, Inc. (IRD), a subsidiary of the

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[11] Uzbekistan Health Examination Survey is also under the assistance of DHS program.

[12] Besides the studied countries, DHS was conducted in Turkmenistan in 2000 and a demographic survey was implemented in Tajikistan in 2002 by UNFPA.

Westinghouse Electric Company. Three phases of DHS are as follows: DHS I in 1984-1989, DHS II in 1988-1993, and DHS III after 1992. Since 1997 DHS has changed its name to *DHS+* to reflect a new mandate under the MEASURE program. MEASURE *DHS+* incorporates traditional DHS features with expanded content on maternal and child health. Until now the *DHS+* program has provided technical assistance for more than 100 surveys in Africa, Asia, the Near East, Latin America, and the Caribbean. Demographic and Health Surveys are nationally representative household surveys with large sample sizes of between 5,000 and 30,000 households generally. A nationally representative sample of women ages 15-49 are interviewed. The sample design of DHS was based on a weighted, multiple stage, and stratified cluster sampling approach. Data enable to make analysis on both national and regional level. Basic criteria for interviews were ever-married women aged 15-49 but never-married in that range also covered in many countries. Along with female interviews, a sub-sample of males is also interviewed in some countries. The DHS combines the qualities of the World Fertility Survey (WFS), and the Contraceptive Prevalence Survey (CPS) and adds important questions on maternal and child health and nutrition. The standard DHS survey consists of a household questionnaire and a women's questionnaire. The household questionnaire contains information on household listing, and household characteristics. The women's questionnaire contains information on the following topics: background characteristics, reproductive behaviour and intentions, contraception, antenatal, delivery, and postpartum care, breastfeeding and nutrition, children's health, status of women, AIDS and other sexually transmitted infections, husband's background, and maternal and child anthropometry. First phase of the survey started in 1984 and fieldworks are still continuing with new name *DHS+* under the MEASURE program. DHS Final Reports are published approximately 8-12 months after the completion of fieldwork since 1986.

As it was detailed in the above paragraphs, characteristics of DHS surveys are different regarding country's particular settings. In order to

reflect this variation between surveys in four studied countries, sample size, survey status, and features of respondents are given in Table V.I. Women questionnaire is employed for the analysis of this thesis. There is a separate section for contraceptive use in standard DHS type questionnaires. This section includes information about practice of the first and recent methods on contraception. Women's Questionnaire of KDHS 1999, KRDHS 1997, TDHS 2003, and UHES 2002 and involves calendar module which is used to record monthly experience of births, pregnancy, pregnancy terminations, contraception, and marriage for an approximate period of six years. Consequently, monthly analysis of basic reproductive events is possible for that reference period. In addition to calendar module, KDHS 1999, KRDHS 1997, and UHES 2002 involve complete pregnancy history which is used to record all pregnancies regardless of their result. Instead of pregnancy history, TDHS-2003 contains birth history which registered all live births. Therefore based on TDHS event analysis of pregnancy outcomes and contraception is limited by the calendar period. This situation is not an important constraint for this thesis. Because, even if it has a very good quality indeed, retrospective data generally do not let us to use information on reproductive events such as abortion for longer period previous to survey. Some authors prefer to make analysis for shorter periods although data is available for longer period (Senlet et. al. 2001b). Moreover, sample size of all four surveys is quite enough for calculation of abortion indicators for three years proceeding to surveys.

Table V.1.1 Characteristics of Data Source of the countries under study

Survey	***Type***	***Female sample***			***Male sample***			***Household***
		Respondent	*Age*	*Sample*	*Respondent*	*Age*	*Sample*	***Sample***
KDHS-1999	DHS	All	15-49	4,800	All	15-59	1,440	5,844
KRDHS-1997	DHS	All	15-49	3,848				3,672
UHES- 2002	Special*	All	15-49	5,588	All	15-59	2,447	4,385
TDHS- 2003	DHS	Ever Married	15-49	8,075				10,836

*UHES is a special survey which was also conducted under supervision of MEASURE DHS.

IV.1.2 Limitations

Individual questionnaires were applied to all women in DHS of Kazakhstan, Kyrgyzstan, and Uzbekistan, whereas, individual interviews were applied only to ever-married women in TDHS-2003. Even TDHS-1998 in which never-married women were also selected for individual interviews, there was no question about fertility regulation practice of never-married women. Moreover there is no reliable alternative data on the issue. Due to lack of data on abortion and contraceptive practice of never-married women in TDHS, analyses of this thesis are based on information from ever-married women. However, previous studies show that it is not a big constraint in the cases of Turkey and Central Asia since marriage is almost universal and most of abortions happen among ever-married women (Westoff, 2000; Westoff et. al. 1998). Traditionally, pre-marital and extra-marital sexuality, especially for women, are not tolerated in the region. Therefore female sexuality is mostly delayed to marital life. Abortion statistics also confirm this reality, for instance 98.6 percent of all abortions in Kazakhstan is performed within marriage (KDHS-1999).

Absence of some modules in UHES-2002 is the other limitation concerning data in this thesis. UHES-2002 was not involved some standard modules such as fertility preference and attitude towards abortion and contraception. Most of them are the independent variable in the linear and logistic regression. Consequently, linear and logistic models of Uzbekistan have a little amount of independent variables than rest of the countries. When the causal models of Uzbekistan are considered, the lack of variables resulted in a bigger limitation. Since variable “desire for more children” is not available, the model which aims to explain causal relation between ethno-cultural characteristics, and fertility preference and practice could not been developed.

IV.2 Hypotheses

In accordance with the objectives and theoretical discussions, the hypothesis of this thesis consists of four interrelated steps:

- Women from particular ethno-cultural background have higher control on their fertility both through abortion and contraception;
- Desire of reproduction is not the only determinant of practice of reproduction. Specifically, not all women who do not want to give birth necessarily use contraception and not the entire unintended pregnancies end with abortion;
- Ethno-cultural characteristics are influential on the relation between desire and practice of reproduction through mediators such as children surviving, and education of women;
- Abortion and contraception have their own places in fertility regulation.

V.3 Technique of Analysis

Operational frame of the thesis has three main parts. The first phase involves descriptive analysis on induced abortion practice and contraceptive use in Kazakhstan, Kyrgyzstan, Turkey, and Uzbekistan. Basic frequencies, cross-tables, and conventional rates are produced by using *Statistical Package for Social Sciences (SPSS)* in this stage. These primary analyses show the pattern of abortion practice and contraceptive use, basic differentials in the level and the pattern of use by selected background characteristics' of women, and importance of ethno-cultural identity for the use of abortion and contraception.

During the data set up, main components analysis (factor analysis) is used to construct women's life style index (Appendix IV), and wealth index (Appendix V). This procedure aims reducing the large number of correlated variables to a smaller number of factors. These factors are the product of original variable set. An eigenvalue greater than 1 indicates a significant explanatory power of this component in the total variance explained. The cumulative percentage of variance explained is the summation of explained variance of significant components. The first main component has the highest contribution to the total model variance. The component matrix indicates the direction and the magnitude of the relation between variables and component. While negative component score signifies a negative correlation, component score less than 0.45 indicates insignificance. So as to form the final model the variables with lower component score should be excluded from the initial model.

In the second phase, covariates of abortion practice and contraceptive use are pointed out. Before considering the multivariate logistic regression model to determine the predictors of ever having an abortion and current use of contraception, collinearity between independent variables is diagnosed by linear regression. The importance of variables which have collinearity for the further part of the study is discussed, and some of the variables are excluded. This selected set of variables is

employed in logistic regression. Two dichotomous dependent variables, ever having an abortion and current use of contraception are defined for two separate logistic models.

Covariates of ever having abortion and current use of contraception are analysed by multivariate logistic regression procedure and presented in terms of odds ratios[13]. Multivariate logistic regression procedure is very useful to describe the relationship of several predictor variables to a dichotomous dependent variable. In order to judge the model, the binary logistic regression procedure reports the Hosmer-Lemeshow goodness-of-fit statistic. On the other hand logistic model does not let us to describe the relationship between predictors and their indirect effect through mediators. The unit of analysis of the descriptive analysis and linear and logistic regression analysis is women.

In the third phase, structural equation modelling (causal models/path analysis) to specify the causal relations between ethno-cultural background and abortion and contraception are developed. Models were generated based on TDHS. Structural equation modelling (SEM) is a deductive method which has a confirmative characteristic. SEM aims to check whether data confirm the hypothesis (Şimşek, 2007). There are three types of modelling strategy in SEM; confirmatory modelling, alternative modelling, and model generation. Out of them model generation is convenient for the purpose of this thesis. Model generation strategy is based on to testify an initial model and modify this model considering the analysis. Therefore this strategy develops the initial confirmatory model. During the analysis of the thesis, models are generated by using package program *Analysis of Moment Structures (AMOS)*. A general model is used to analyze the relations behind pregnancy intention, abortion, and contraception. Therefore, direct and

[13] Odds ratio is the ratio of the probability that some event will occur divided by the probability that the same event will not occur (Kleinbaum et. al. 1998).

indirect effects of selected variables on the basic relation between desire and practice are seen together. Model allows to see the relation of abortion and contraception between pregnancy intention and mediator and moderator variable. The unit of analysis of the model is pregnancies 5 years preceding the survey.

Multiple group analysis is employed in order to see ethno-cultural variations of the models. Ethno-cultural identity, a categorical variable with three categories, is moderator for the causal models. Multiple group analysis is recommended for application of causal model especially for different cultural groups (Şimşek, 2007). Model involves both observed variables. Observed variables and measurement models are used to specify tentative initial causal model. Final model is generated from initial model with the guidance of theoretical framework of the study and modification indices of the tentative models. Therefore the model that fits the data well from a statistical point of view and has meaningful interpretation from a theoretical point of view is specified as final model. In a further step, hypotheses are tested for studied countries, and outcomes of the different models are compared.

In the causal model one-headed arrow represents a causal relationship between two variables while a two-headed arrow represents a simple correlation between them. Another differentiation is between representation of latent and observed variables. In principle, simpler is better for the path diagram (model). Unless they are necessary, additional variables should not be ended in the model (Loehlin, 2004). Although just identified path diagrams allow exact solution in theory, over identified path diagrams are generally preferred by behavioural scientists. Loehlin (2004) explain the reason of this preference as the data of behaviour science contain measurement and sampling errors. It is also similar for social sciences. Furthermore obtaining the goodness of fit measure for path diagrams only possible for over identified models not for just identified.

Two basic types of variables, observed and latent, can be employed in SEM. Latent variables are constructs that are indirectly measured or observed using observed variables (Bollen, 1989; Schumacker and Lomax, 2004).

V.3.1 Model fit measures of SEM

The *chi squared test* is employed for to decide that a specific model *does not* fit the data in SEM. According to the chi squared test, ratio of χ^2 to degrees of freedom should be less than 3.0. If the ratio is higher than 3.0, the null hypothesis is rejected so the model does not fit these data. In the case of ratio lower than 3.0, we cannot directly conclude that the model is correct but it can be correct.

Another measure of fit is *the root mean squared error of approximation (RMSEA)*. RMSEA is a population-based index. Where d= of χ^2-df and N is sample size, RMSEA=$\sqrt{}$ (d/df). Generally, RMSEA values lower than 0.10 are considered as “good”, and values lower than 0.05 are considered as “very good” (Loehlin, 2004).

Other two common fit values are Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI). GFI and AGFI values higher than 0.90 are considered as “good”, and values higher than 0.95 are considered as “very good” (Loehlin, 2004).

V. 4 Variables

Table V.4.1 Variables of Linear Regression Model

Variable label	Variable type	Variable name (from raw data)			
		Kazakhstan	**Kyrgyz Republic**	**Turkey**	**Uzbekistan**
Total number of induced abortion (dependent variable)	Continuous	S209a	S209	q230d	Qb09a
Ethno-cultural group	Dummy	Snlang, slang, v130, v131	Sresplng, s119b, v130, v131	S116a, s708a, s708da, *S708db, S708dc, S708dd, S708de, S708df, S708dg, S708dx,*	Qnatlang, qintlang, qa17, qa18
Working status	Dichotomous	V731	V731	V731	Qs07, Qs08
Education	Continuous (single year)	V133	V133	V133	Qa07, qa08, qa09
Current age	Continuous	V012	V012	V012	Qa06c
Total children ever born	Continuous	V201	V201	V201	Qb08
Number of living children	Continuous	V218	V218	V218	qb19$01, qb19$02,... qb19$24
Wealth index	Continuous (factor score)	V120, V121, V122, V123, V124, V125, V153	V120, V121, V122, V123, V124, V125, V153	V191	
Women's life style index	Continuous (factor score)	S721A, ...S721E, S719A, ...S719E	n.a.	S766a, s766b,...s766e, s767a, ...s767d, s768, s770, s772a,...s772g	QS29A, QS29B, QS29C, QS29D, QS29E, QS29F

Variable label	Variable type	Variable name (from raw data)			
		Kazakhstan	**Kyrgyz Republic**	**Turkey**	**Uzbekistan**
Health insurance	Dichotomous	na	na	S758	na
Social security	Dichotomous	na	na	S715	na

House ownership	Dichotomous				S123, V511	QS27B
Age at first marriage	Continuous (single year)	V511	V511			Qq12c
Years since first marriage	Continuous (single year)	V512	V512	V512		Qa06c, Qq12c
Type of marriage	Dichotomous	na	na	S268$1		Qs25
Household composition at the time of marriage	Dichotomous	na	na	S270$1		Qs26
Consanguinity	Dichotomous	na	na	S272$1		Qs23
Bride money	Dichotomous	na	na	S269$1		n.a.
Type of place of residence	Dichotomous	V025	V025	V025		qtype
Type of place of childhood residence	Dichotomous	V103	V103	S119a, v025		
De facto place of residence	Dummy	V026	V026	V026		qlocal
Ever use of contraception	Dichotomous	V302	V302	V302		Qb54
Current use of contraception	Dichotomous	V312	V312	V312		Qb61n
Contraceptive use and intention	Dummy	V364	V364	V364		n.a.
Ideal number of children	Continuous	V613	V613	V614		n.a.
Desire for more children	Dummy	V605	V605	V605		
Approve abortion	Dichotomous	S350	S596	S372		na
Consider abortion	Dichotomous	S351	S711a	S373		na
Approve contraception	Dichotomous	V612	V612	S368		na
Husband approve for contraception	Dichotomous	V610	V610	S371		na

Table V.4.2 Variables of Logistic Regression Model

Variable label	Variable type	Variable name (from raw data)			
		Kazakhstan	**Kyrgyz Republic**	**Turkey**	**Uzbekistan**
Ever had abortion (dependent variable)[1]	Dichotomous	s209a	s209	q230d	Qb09a
Current use of contraceptive (dependent variable)[2]	Dichotomous	V312	V312	V312	Qb61n
Ethno-cultural group	Categorical	Snlang, slang, v130, v131	Sresplng, s119b, v130, v131	S116a, s708a, s708da, *S708db, S708dc, S708dd, S708de, S708df, S708dg, S708dx,*	Qnatlang, qintlang, qa17, qa18
Working status	Categorical	V731	V731	V731	Qs07, Qs08
Education	Continuous (single year)	V133	V133	V133	Qa07, qa08, qa09
Current age	Continuous (single year)	V012	V012	V012	Qa06c
Number of living children	Categorical	V218	V218	V218	qb19$01, qb19$02,... qb19$24
Wealth index	Categorical	V120, V121, V122, V123, V124, V125, V153	V120, V121, V122, V123, V124, V125, V153	V191	
Women's life style index	Continuous (factor score)	S721A, ...S721E, S719A, ...S719E	n.a.	S766a, s766b,...s766e, s767a, ...s767d, s768, s770, s772a,...s772g	QS29A, QS29B, QS29C, QS29D, QS29E, QS29F
Health insurance	Dichotomous	na	na	S758	na
Social security	Dichotomous	na	na	S715	na
House ownership	Dichotomous			S123, SH123	QS27B
Age at first marriage	Continuous (single year)	V511	V511	V511	Qq12c
Type of marriage	Dichotomous	na	na	S268$1	Qs25
Household composition at the time of marriage	Dichotomous	na	na	S270$1	Qs26
Consanguinity	Dichotomous	na	na	S272$1	Qs23

Variable label	Variable type	Variable name (from raw data)			
		Kazakhstan	Kyrgyz Republic	Turkey	Uzbekistan
Bride money	Dichotomous	na	na	S269$1	n.a.
Type of place of childhood residence	Dichotomous	V103	V103	S119a, v025	
Ever use of contraception	Dichotomous	V302	V302	V302	Qb54
Desire for more children	Categorical	V605	V605	V605	
Approve abortion	Dichotomous	S350	S596	S372	na
Consider abortion	Dichotomous	S351	S711a	S373	na
Approve contraception	Dichotomous	V612	V612	S368	na
Husband approve for contraception	Dichotomous	V610	V610	S371	na

[1] Used as independent variable for model of covariates of current use of contraception.
[2] Used as independent variable for model of covariates of ever had abortion.

Table V.4.3 Variables of structural model

Observed Variables		Type of variables	Turkey
Education		Continuous	V133
Number of living children (number of living children at the time of event)		Continuous	V218 (tevent, cmcvent, b3$01, b5$01, b7$01, b3$02, b5$02, b7$02, … b3$20, b5$20, b7$20)
Pregnancy intention (desire of more children at the time of pregnancy)	us	Dichotomo	m10$01, m10$02, … m10$06
Pregnancy result (birth/abortion)	us	Dichotomo	Tevent
Contraception (contraceptive use one month before pregnancy)	us	Dichotomo	V313

V.4.1 Descriptions about variables

In the different stages of the analyses of the thesis, several variables and their various types are employed. Labels, types, and names of each variable in three models; linear, logistic, and causal; are listed in Table V.4.1, V.4.2, and V.4.3. Among these variables, *number of abortion* is the dependent variable of linear regression analysis and *ever had abortion* and *current use of contraception* are the dependent variables of the two logistic regression analyses. The terms dependent and independent variable are not used in SEM terminology. A similar variation among variables is between endogenous and exogenous variables. In the initial models and multiple group models *number of living children* and *education* are exogenous variables. In the final model *ethno-cultural background* is introduced as exogenous variable.

In the raw data, some of the variables are continuous and some others are categorical. In accordance with the model's necessities, some categorical variables are changed to dummy variables and some continuous variables are modified to categorical variable. For the linear regression model and in some stage of the causal model, categorical type of variables is not appropriate. Unless a continuous form of a variable available in the raw data, dummy variables are employed instead of categorical variables. Dummy variables do not indicate meaningful measurements but they rather indicate the categories of interest. Values of those categories are usually like 1.0, and -1. As a simple rule of defining dummy variable for regression analysis, if categories of interest of a nominal variable are k, number of dummy variable should be k-1 (Kleinbaum 1998). The rational of construction k-1 dummy variables instead of k categories variable is to avoid perfect collinearity among dummy variables (Hardy, 1993). Therefore a reference category should be selected for each a categorical variable. On the other hand, in the case of logistic regression, SPSS applies a similar procedure to categorical variable and creates dummy variables within the program. Therefore defining the reference category is enough to use categorical variables in logistic regression by using SPSS.

Abortion is the core concern of the thesis and many variables related to abortion practice and attitude towards abortion are used in the analyses. The first variable “total number of induced abortion” is a continuous variable. The variable is used as dependent variable with its raw form in linear regression model. During the descriptive analysis, this variable is transformed to a four-category variable as *none, 1, 2-3, 4 and more*. The second variable “ever had abortion”, a dichotomous variable, is used in descriptive analysis, logistic regression models (as independent and dependent variable), and causal models. Another variable “result of pregnancy” 5 years preceding the survey which can be considered as abortion related in the context of this thesis, is categorical variable. Both live birth and abortion are intentional results of pregnancy whereas spontaneous abortion or stillbirth is accidental. Model aims to explain relation between desire for more children and result of pregnancy. Therefore only intentional results are meaningful in this context. Consequently, for the causal model two categories of pregnancy result, abortion and live birth are analysed while pregnancies that end with spontaneous abortion or stillbirth are excluded from the model.

Two variables are used to argue attitude towards abortion in this study. The first variable, "approve induced abortion" is a categorical variable. For the linear and logistic regression and causal models, four categories of the variable are reduced to two dichotomous categories as *disapproves* and *others (*others include *approves, depends, and don’t know)*. The second variable, "Would consider induced abortion" is also a categorical variable in the raw data. This variable is formed by using question *“Think that you are having an unwanted pregnancy in the future. Do you prefer to have induced abortion?”* Three categories of this variable are reduced to two dichotomous categories as *no and other (other include yes and don’t know)*.

Contraception and numerous variables related to contraceptive use and attitude are employed in the analysis is as the other main concern of the thesis. Variable “ever use of contraception” is a dichotomous one and used in all descriptive analysis, linear and logistic regression models (as independent and dependent variable), and causal models. Second variable, current use of contraception is categorical variable which present current contraceptive practice by type of contraceptive method. This variable is transformed to a dichotomous variable with categories as *yes (currently using any method)* and *no (currently not using a method)*. The variable is included in linear regression, logistic regression (as dependent variable), and causal model (as endogenous variable). Another variable contraceptive use and intention is a categorical variable with categories as *using modern method, using traditional method, non-user intends to, and does not intend to*. This variable is used in linear regression by transforming three dichotomous dummy variables. The first one is “using or not” (modern or traditional method user are labelled as yes and other as labelled as no), the second one is “non-user intends to or others” (non-user intends to are labelled as yes and other as labelled as no), and the last one is “does not intend to or others” (does not intend to is labelled as yes and other as labelled as no).

Two variables are included into the analysis regarding attitude towards contraception in this study. These variables are obtained from a sub-sample in THDS-2003. The first variable, "all right for religion to use contraception" is a categorical variable. For each stage of the analysis, this variable is transformed to a dichotomous variable in which yes refers *yes, appropriate* or *has no religion* or *don’t know* and no refers *inappropriate* or *some methods are inappropriate.* The same recoding some the same categories is also done for variable “husband thinks certain method inappropriate according to religion”, therefore both variables related to attitude towards contraception in the analysis are recoded dichotomous variables.

The variable ethno-cultural background is the main explanatory variable in the ever stage of the analysis in this thesis. Details of the forming of this variable are presented in Chapter 3 and Appendix II. In accordance with the model specification, not only the categorical form of the variable but also the modification of the variable as dummy variable is used. Three dummy variables are created in all four data set. The first one is “being native” (Kyrgyz or Kazak or Turk or Uzbek), the second one is “being minority” (Russian or Kurd), and the third one is “being Russian speaking native” (in the cases of Central Asian countries), or “being Turkish speaking Kurd” (in case of Turkey). Categorical type of the variable is employed in descriptive analysis, logistic regression, and causal model (as exogenous moderator variable).

Several socio-demographic variables are included into the analysis. Variables “current age” and “education” are used in different stages of the analysis with their continuous form (single year). This single year form of education is available in the raw data except for UHES-2002. In case of Uzbekistan, variable is computed by using variables “ever attended school”, “highest educational level”, and “highest grade at that level”. Variable “working status” is modified form of categorical variable “worked in last 12 months” (three categories of the variable are *currently working, worked in the last 12 month,* and *never worked*). This variable is composed by using variables, *respondent currently working, currently working: probed,* and *worked in last 12 months* for Uzbekistan. For variable “working status”, categories are reduced to two categories as dichotomous variable. The category label *worked* refers *currently working or worked in the last 12 months* while the other category label refers *never worked*.

Variables “health insurance” and “social security” are the country specific variables for the case of Turkey. Both have six categories which indicate not only the presence but also the type of insurance or security in their raw data. For the analyses of this thesis, categories of variables are reduced to two dichotomous categories as *have health insurance/have not*

health insurance and *have social security/have not social security.* Variable “house ownership”, available in TDHS-2003 and UHES-2002, is also categorical and is transformed to a dichotomous form as *owned by a household member* and *not owned by a household member* for the analysis of the study. In the original form of the women’s questionnaire of TDHS-2003, the variable is available only for visitor women. This variable combined by the same question asked in the household questionnaire for women who are usually resident of the selected household.

Two indexes are employed in the analysis. The first one is wealth index, which is a product of main component analysis (factor analysis) of the availability of selected household durable goods. Factor involves different goods regarding country’s own condition. Index is available in the original data set in TDHS-2003 but not for the rest of the surveys. Therefore wealth index is calculated from KDHS-1999, KRDHS-1997, and UHES-2002 with main component analysis. Detailed tables of the analysis are presented in Appendix V. Two types of the index are available; continuous as factor score and categorical with five categories as *poorest, poor, middle, rich*, and *richest*. But the categorical index could not been formed for Kazakhstan and Kyrgyzstan since the factor score of the index is normally distributed. For that reason, continuous factor score of wealth is used in models for Kazakhstan and Kyrgyzstan while categorical form of the index is employed for logistic models of Turkey and Uzbekistan.

For the case of Turkey, variables “has gas or electric oven”, “has TV”, “has car”, “has telephone”, “has dishwasher”, “has washing machine”, “has vacuum cleaner”, “has video recorder”, “has camera”, “has CD player”, “has mobile telephone”, “has computer”, and “has refrigerator” are included into the wealth index.

For the cases of Kazakhstan and Kyrgyzstan the selected variables for the initial model of factor analysis for wealth index are "has radio", "has television", "has refrigerator", "has bicycle", "has motorcycle", "has car", and "has telephone". Components with value of component score is less than

0,45 are excluded from the model stepwise. In the final model of Kazakhstan, "has motorcycle", "has bicycle" and "has car" are excluded. Finally model has four components and the first factor explains 45 percent of variance. Same procedure is applied for the case of Kyrgyz Republic. Three variables with low component score, "has motorcycle", "has bicycle", and "has radio" are excluded from the final model of wealth index. In that model first factor explains 43 percent of variance.

And for the case Uzbekistan variables “air condition” "radio", "television", "telephone", "refrigerator", "dishwasher", "washing machine", "vacuum cleaner", "tape recorder", "video player", "video camera", "camera", “satellite antenna", "personal computer", "bicycle", "motorcycle or scooter", and "car or truck" are included into the initial model. After reduction of the components with low score, final model involves eight components, “air condition” "radio", "telephone", "refrigerator", "washing machine", "vacuum cleaner", "video player", and "camera". First factor of this model explains 40 percent of total variance.

The second index is women’s life style index which is the product of main component analysis. Different variables are employed for the index in accordance with the data availability of each country. Firstly, all variables involved into the model transform to dichotomous variables. Women’s life style index could not be composed for Kyrgyzstan because of the absence of such variables. Detailed results of the main component analysis are presented in Appendix IV. The first main component is used as a women’s life style index, a continuous variable. The index also have a categorical version, the values of factor less than 0 indicates low level, between 0 and 1 indicates the moderate level and higher than 1 value indicates high level of women’s status.

Two groups of variables are used to construct women’s life style index for Kazakhstan. In the first group variables are about justification of hurting of spouse and five variables are namely "spouse justified in hurting if goes out without telling", "spouse justified in hurting if neglects the

children", " spouse justifies hurting if argues with him", "spouse justifies hurting if refuses sex with him", and "spouse justifies hurting if burns the food". These variables are categorical. In order to include them into the factor analysis their three categories; *yes, no*, and *don't know*, are reduced to two categories as *yes and don't know,* and *no*. The second group of the variables employed in the index is about decision making. Five variables, "final say on decision about health", "final say on decision about large household purchases", "final say on decision about daily household purchases", "final say on decision about visits", and "final say on decision about food for each day" are categorical. Five categories of these variables are grouped into two dichotomous categories. In a word, category label *respondent alone or in company* involves previous three categories; *respondent, respondent and husband/partner jointly,* and *respondent and someone else jointly* while category label *other than respondent* contains categories *husband/partner, and respondent and someone else jointly.* Above mentioned ten variables are included into the main component analysis. There are two main components in the model. Variables about decision making are more related to the first factor while variables are about justification of hurting of spouse are much more related to the second factor. All variables are significantly correlated to the first main factor, all have component score higher than 0.45. Therefore any reduction is not performed. The first component explains 38 percent while the two main components explain 65 percent of the total variance of the model.

In brief, initial model of Turkey involves 18 components which are from three different groups. Namely the first group is concerning about justification of violence of spouse "burns the food", "neglects the children", "argues with husband", "waste money", "refuses intercourse"; the second group is regarding equality between women and men; "important decisions by men", "men are wiser", "woman should not argue", "male child should get education"; and the last group of variables are related to the life style "ever gone to the cinema", "ever gone to the theatre", "goes on holiday", "goes outside for a meal", "goes for a picnic", "puts on make-up", "wears a head scarf when going out", "participates in any society/club", and "sports

regularly”. Then, the last two variables are excluded from the final model since they have low component score related with the first main component. Consequently, 16 variables are included into the final model and the first factor explains 33 percent while the first three factors explain 52 percent of variance. Three main components are formed in the model. Component matrix show that variables concerning about life style are more related to the first factor, variables are about justification of violence of spouse are much more related to the second factor while variables with regard to equality between women and men are more significant in the third factor.

Finally for Uzbekistan 14 variables from three groups are involved in the initial model. First two groups are very similar with the ones in KDHS-1999. In the first group variables are about justification of violence of spouse. Five variables are "justifies violence when goes out without telling", "justifies violence when neglects children", "justifies violence when argues with husband", "justifies violence when refuses sex", and "justifies violence when burns food". These variables are categorical. For the factor analysis their three categories; *yes, no*, and *don’t know*, are reduced to two categories as *yes and don’t know* and *no*. Six categorical variables, "final say on own health care", "final say on making large household purchases", "final say on making daily household purchases", "final say on visits to family", "final say on visiting friends", and "final say on food to cook each day" are the second group of the variables used in the women’s life style index. Seven categories of these variables are grouped into two dichotomous categories. Concisely category label *respondent alone or in company* involves previous three categories; *respondent, respondent and husband/partner jointly,* and *respondent and someone else jointly* while category label *other than respondent* contains categories *husband/partner, mother-in-law, and respondent and someone else jointly.* Category label *decision not made/not applicable* is defined as *missing*. The last group of variable of the index is about permission of her for some selected activities. There are three categorical variables in this group; "permitted to go to the local market", "permitted to go to the local health center", and "permitted to go to friends". Three categories of these variables are reduced to two

categories. In the modified form of the variables, the first category is *alone* and the second category is *not alone or not at all*. These 14 variables are included into the initial model. After the reduction of the insignificant variables, six variables ("final say on own health care", "final say on making large household purchases", "final say on making daily household purchases", "final say on visits to family", "final say on visiting friends", and "final say on food to cook each day") and one main component remain in the final model. This component explains 61 percent of the total variance of the model.

Three variables related to place of residence are used in the different stages of the analysis. The first one “type of place of residence” has two categories as *urban* and *rural*. The second one “de facto place of residence” has four categories as *countryside, town, small city*, and *big city/metropolis.* For the linear regression model this variable is transformed to four dummy variables. And the last one “type of place of childhood residence” is composed of two variables “place of childhood residence” and “type of place of residence”. “Place of childhood residence” indicates the place of residence in which respondent spent majority of her time in the first 12 years of her life. “Type of place of childhood residence” also has two categories as *urban* and *rural*.

Six variables are included into the analysis in order to explain the formation of marriage. Marriage is an important stage for fertility related analysis since it usually indicates the beginning of her reproductive life in the context of the selected countries. Therefore if women experienced more than one marriage, information related to the first marriage is used in the analysis. The first two indicators are related to marriage age; “age at first marriage” and “years since first marriage”. Both variables are continuous as single years. Other four variables are about structure of marriage. Variables "related to husband" and "anyone else in the household" are dichotomous variables and they are used in their original form with variable label “consanguinity” and “household composition”. The first variable controls

whether the marriage is a consanguineous marriage. The second variable checks the household composition at the time of marriage. Label *no* indicates that couple is alone in the household while *yes* indicates that any person other than couple was in household at the time of marriage. Last two variables "marriage arranged" and "paid brides money" are categorical and transformed to dichotomous variables with variable label “type of marriage” and “brides money”. Two categories of “type of marriage” are *arranged by couple* and *arranged by other*. And the categories of “brides money” are *paid any form* and *not paid*.

“Number of living children” is used in all linear, logistic, and causal models. This variable refers to number of living children at the time of the survey. In the linear and logistic model as well as the causal model which explain causal relation behind contraception, the variable is used with its raw form. In the second causal model which explain the causal relation between pregnancy intention and pregnancy result, variable reconstructed as “number of living children at the time of event (pregnancy)”. In cases of pregnancy and abortion, this variable refers to number of living children at the time of pregnancy and number of living children at the time of abortion respectively. In the case of live birth the variable presents the number of living children at the end of the second month of the pregnancy. Since decision for ending pregnancy whether live birth or abortion is possible before the third month of the pregnancy, reference date is the end of the second month. The variable is formed by using several variables related to the event and birth history of woman. In the causal model of abortion of which unit of analysis is pregnancy, there are three possible situations; pregnancy is still continuing, pregnancy ended with live birth, or pregnancy ended with abortion. “Number of living children at the time of the event" is calculated for these three conditions by using variables, “type of event”, “time of event”, “time of birth (for all births)”, “survival status of live birth (for all births)”, and “time of death (for all deceased children)”.

Two variables are employed in order to explain fertility preference. The first one “ideal number of children” is mix type variable; continuous and categorical. There is only one category as *non-numeric response.* It is

modified to a continuous variable by defining the *non-numeric response* as *missing*. The second variable “desire for more children” is a categorical variable with seven categories. Three different modifications is done for this variable. Firstly it is transform to dichotomous variable with categories as *yes or may be* and *no or impossible*. This dichotomous form of variable is used for the linear regression model. Later, the variable is converted to three categories variable as *yes, now; yes, later;* and *no more*. It is used for the logistic regression. Finally, three dummy variables are composed based on for these three categories. These dummy variables are used for causal model as exogenous variable.

CHAPTER VI DESCRIPTIVE ANALYSES

This chapter aims to present descriptive analyses on induced abortion practice and contraceptive use in Kazakhstan, Kyrgyzstan, Turkey, and Uzbekistan. Conventional indicators and basic cross tables are used to describe the prevalence of the two means of fertility regulation for each country. Both aggregate and cross-sectional indicators are obtained in order to express the cumulative and as well as the current levels of use. This chapter also covers a discussion on the relation between abortion practice and contraceptive use. Furthermore, ethno-cultural variation in the use of abortion and contraceptives is started to be discussed based on the data analysis in this chapter. Therefore ethno-cultural groups are used as the background variable in the tables of this chapter.

In this chapter basic concepts which are used in descriptive analyses are introduced in the first place. The abortion practice and contraceptive use in four studied countries are pursued by calculations and discussions on the relation between abortion practice and contraceptive use are introduced for each country. Finally, in country variations by ethno-cultural groups are presented in this chapter.

VI.1 Basic concepts

Induced abortion is the termination of pregnancy before the foetus has become capable of sustaining an independent extrauterine life with the intention of avoiding a live birth (Tietze and Henshaw, 1986).

Spontaneous abortion or miscarriage is an abortion without any conscious intervention of any person to end the pregnancy (Tietze and Henshaw, 1986).

Stillbirth is a foetal death after the foetus has become capable of sustaining an independent extrauterine life (Tietze and Henshaw, 1986).

Percent aborted is percent distribution of ever-married women who had at least one abortion, expressed as a percentage.

Repeat abortion is percent distribution of ever-married women who had more than one abortion among women who have ever had an abortion.

Abortion ratio expresses the number of abortions per 100 pregnancies or 100 live births (in this study, 1-36 months before the survey).

General abortion rate (GAR) is the number of abortions per thousand women at ages 15-49 (1-36 months before the survey), analogous to general fertility rate. This estimate allows us to compare levels of abortion between countries and regions regardless of their population size at reproductive ages.

Age-specific abortion rate (ASAR) is the number of abortion per thousand women at the specific age group, analogous to age-specific fertility rate.

Total abortion rate (TAR) is the average lifetime number of abortions a woman would have if she experienced the current age-specific abortion rates, analogous to total fertility rate (Tietze and Henshaw, 1986). TAR expresses the average number of abortions per woman (in this study, 1-36 months before the survey).

VI.2 Abortion practice and contraceptive use in four countries

Table VI.2.1 consists of basic summary indicators for abortion prevalence among women. While it is known that all four countries have smoothly decreasing abortion level; Kazakhstan and Kyrgyzstan in particular, have necessarily high level of abortion practice as indicated by

selected indicators. Abortion seems to be very popular in Kazakhstan; half of the ever-married women in the country had experienced at least one abortion. In the other three countries, never aborted women are the majority. Kyrgyzstan has the second highest abortion prevalence in reference to percent ever aborted. Nearly one third of women in Uzbekistan and one fourth of women in Turkey had at least one abortion.

As well as the prevalence of abortion, number of abortion practice is a very useful indicator to judge the level of abortion in a country. The ranking of countries are same both to having repeat abortion and percent ever aborted. Analyses show that the probability of second abortion is quite high even for Turkey which has the lowest percent for repeat abortion.

Other than previous aggregate indicators based on women, frequency of abortion in the last three years is calculated by abortion per 100 pregnancies, and abortion per 100 live births (Table VI.2.1). Abortion practice in Kazakhstan has obviously higher share both for the two abortion ratios than the other three countries.

Ranking of countries is slightly different according to their general abortion rate (GAR), and total abortion rate (TAR). Kyrgyzstan has the highest level in terms of GAR and TAR and followed by Kazakhstan, Uzbekistan, and Turkey. Percent abortion and repeated abortion are calculated covering ever-married women while GAR and TAR are based on all women at reproductive ages. Thus relatively higher proportion of both ever-married and currently married women in Kyrgyzstan than that of Kazakhstan could be the cause of variation in the ranking of countries.

Analyses show that a necessary difference exists between countries' level of ever-married women by ever use of contraceptive method. Overwhelming share of method users has tried modern contraceptives in all four countries. Turkey has relatively higher share of women who used only traditional methods. Turkey has the lowest percentage of women both for who never used contraceptive and ever aborted, while the Central Asian

countries have higher percentages. These results arouse a question about the relation of the share of women never used contraceptive and the share of women ever aborted. Although separate statistics indicates a relation between the level of never use of contraceptive and ever-use of abortion, those practices should be cross-checked for an adequate answer. The critical question here is the never users of contraceptives are the ever user of abortion. Further analysis in this chapter aims to answer this important question.

Table VI.2.1 Basic indicators of abortion practice, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Percent ever aborted	51.6	38.4	23.9	28.8
Repeat abortion	65	60	42	47
Abortion per 100 pregnancies	35.9	27.2	11.8	20.2
Abortion per 100 live births	64.4	39.4	14.6	28.6
GAR	44	48	11	27
TAR	1.442	1.553	0.385	0.953
Number of ever-married women	3585	3022	8074	4043
Number of pregnancies	1544	1861	3109	2061

Table VI.2.2 Percent distribution of ever-married women by ever use of contraceptive method, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Never used	13.0	19.2	10.4	16.9
Used only traditional method	6.1	6.9	13.9	5.7
Used modern method	80.9	73.9	75.7	77.4
Total	100.0	100.0	100.0	100.0
Number	3585	3021	8075	4042

Current state of contraceptive use is also analyzed in the following two tables. Studied countries are not much different than each other in terms of any contraceptive users per 100 currently married women (Table VI.2.3). On the other hand, modern method prevalence gives us a clear idea

about variation of method mix of four countries. In spite of the fact that Turkey has the highest level of contraceptive use, level of modern contraceptive prevalence is the lowest. On the contrary, Kyrgyzstan, which has the lowest level of contraceptive use, has higher prevalence for modern method use than Turkey. Method mix is significantly important in relation to the level of abortion since failure rates differ according to the method type. In this thesis contraceptive failure is not included into the analysis. But variation in the method mix among countries and among ethno-cultural groups is taken into consideration. Furthermore, literature and data analyses of this thesis show that modern method users have higher intention to practice abortion in case of unintended pregnancy.

Table VI.2.3 Contraceptive users per 100 currently married women by method type, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Any contraceptive	66.1	59.5	71.0	67.7
Modern contraceptive	52.8	48.9	43.1	60.0
Number	3018	2675	7672	3720

Table VI.2.4 shows the contraceptive mix among currently married women who use contraception at the time of the survey in the four countries. When all methods are considered, the favourite method is different in Turkey than that of the Central Asian countries. IUD is most popular method in Central Asian countries with its share between 64 to 77 percent. However in the case of Turkey a traditional method, withdrawal, appears as the most common method followed by IUD and condom.

Contraceptive failure is one of the major causes of abortion. And it is also known that contraceptive methods have different levels of effectiveness and failure rates. Besides the methods' own effectiveness, each method has different user failure in accordance with population. Therefore method mix of a country is important as much as the general contraceptive prevalence rate. Withdrawal is known with its high failure rate while IUD is known with its low rate of failure in the literature. Result of the Turkey Demographic and

Health Survey 1998 is consistent with literature in the case of Turkey (Ergöçmen et. al. 2001). Recent trend is similar; contraceptive failure rate of withdrawal, condom, and IUD in Turkey is 17 percent, 8.1 percent, and 1.8 percent respectively (Özdemir et. al. 2005). On the other hand situation is different in the cases of Central Asian countries; the highest proportion of women who experiences failure was using IUD at the time of conception (Westoff et. al. 1998). When contraceptive mix of the countries is examined in detail, it is seen that methods which have high failure rate are the method that are commonly used by women in the studied countries.

Table VI.2.4 Percent distribution of currently married women who use contraception by current contraceptive method, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

Method	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Pill	3.6	2.9	6.6	2.4
IUD	63.5	64.2	28.5	76.5
Injections	0.9	2.2	0.6	3.0
Diaphragm	0.6	0.2	0.8	0.0
Condom	6.8	9.6	15.2	3.0
Female Sterilization	4.2	3.0	8.0	3.8
Male Sterilization	-	-	0.1	-
Periodic Abstinence	7.1	5.4	1.5	1.6
Withdrawal	4.4	10.1	37.2	5.2
Other	6.4	2.5	0.6	0.4
Lactational amenorrhea	2.4	-	0.8	4.1
Total	100.0	100.0	100.0	100.0
Number	1995	1592	5447	2518

Table VI.2.5 shows a detailed distribution of pregnancies by their type of end for each country[14]. The share of spontaneous abortion and stillbirth has not much variance among countries. On the other hand Kazakhstan draws attention with its very high share of induced abortion and very low

[14] Percent distribution of pregnancies of ever-married women by type of end of pregnancy, 5 years preceding the survey is presented in Table IV.1 Appendix VI.

share of live birth. Only half of the pregnancies end with live birth in Kazakhstan, while it is three fourth in the case of Turkey.

Table VI.2.5 Percent distribution of pregnancies of ever-married women by pregnancy result, 3 years preceding the survey, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

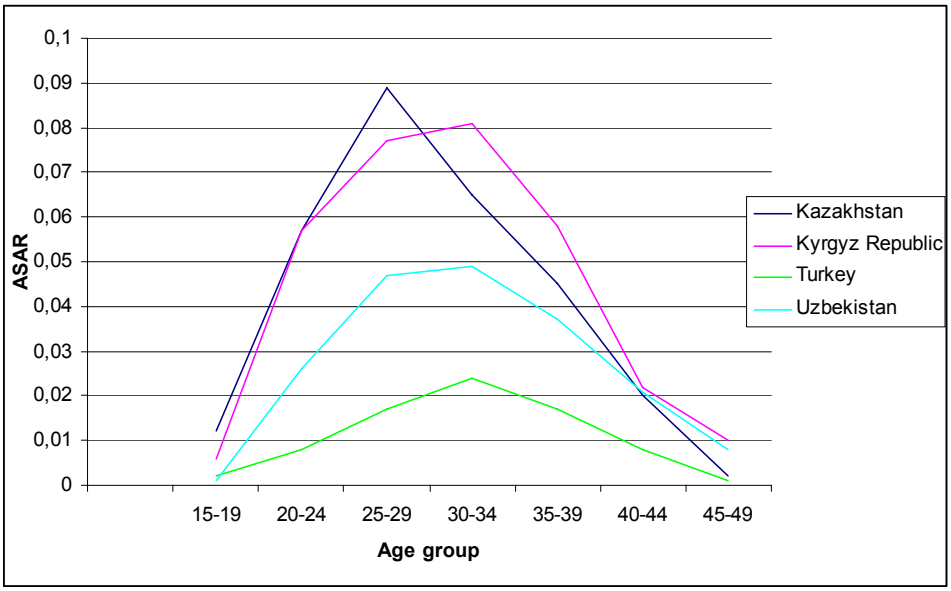
	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Birth	52.7	63.0	76.6	71.9
Induced abortion	35.9	27.2	11.8	20.2
Spontaneous abortion	10.0	9.0	10.3	7.1
Stillbirth	1.3	0.8	1.3	0.8
Total	100.0	100.0	100.0	100.0
Number	1544	1861	3109	2061

Three different patterns are observed in four countries in accordance with their TAR. ASAR are critical for comparison of abortion practice of different countries as well as their cumulative effects as TAR. Table VI.2.6 shows that high level abortion countries, Kyrgyzstan and Kazakhstan, have minor variations based on ASAR[15]. Higher ASAR are observed in Kazakhstan in early ages till 30s while ASAR are higher in Kyrgyzstan after age of 30. This variation could be a direct consequence of difference age structure of abortion in two countries and/or an indirect consequence of different age pattern of marriage. Turkey has the lowest ASAR for all ages. ASAR have reached their highest level at age of 25-29 and 30-34 and have started to decrease from this age forward. Rates are much lower for the ages between 20-24 in the cases of Turkey and Uzbekistan.

Age patterns of abortion practice in the studied countries are presented in Figure VI.2.1. As it is seen in the figure, women in Kazakhstan reach their highest level of abortion practice at earlier ages than women in other countries. Kyrgyzstan, in spite of its higher level of abortion, has a similar age pattern of abortion with Turkey and Uzbekistan.

[15] ASAR and TAR, 5 years preceding the survey are presented in in Table IV.2, Appendix VI.

Figure VI.2.1 Age-specific abortion rates (ASAR) 3 years preceding the survey, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002



When the total number of abortion is examined, it is seen that the percent distributions of women who has one abortion are more or less similar with varying proportions from 14 to 18 throughout the countries (Table VI.2.7). On the contrary, the percent distributions of women who has no abortion and who has more than one abortion differ necessarily country to country. Especially higher order abortions, 4 and 4+, are more frequent in Kazakhstan but very rare in Turkey and Uzbekistan.

Table VI.2.6 Percent distribution of ever-married women by total number of induced abortion, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
None	48.4	61.6	76.1	71.2
1	18.3	15.4	13.8	15.4
2-3	22.1	17.3	8.6	10.6
4+	11.2	5.7	1.5	2.8
Total	100.0	100.0	100.0	100.0
Number	3585	3021	8075	4042

VI.3 Calculations and discussions on the relation between abortion practice and contraceptive use

Referring to the core subject of this thesis, abortion practice and contraceptive use are correlated in the following two tables. Table VI.3.1 focuses on the relation of ever use of abortion and contraception. It should be mentioned that reference time of these events is not corresponding in the following analysis. The centre of attention of this analysis is to find out how far the consumers of abortion and contraception are same and how far abortion is the mean of fertility control among non-users of contraception. The primary finding of analysis is that the proportion of women who have used only abortion for fertility regulation is very low in all four studied countries. Figures show that majority of women either used only contraception or both abortion and contraceptive. In Kazakhstan, almost half of the women have used both means of fertility control, while around one third of the women have used only contraceptive methods. In the other three countries, the modal category is those women who have used only contraception. In the case of Turkey, two third of the women is in that category. The proportions of women who have used both abortion and contraception are also at high level: one third of women in Kyrgyzstan, and one fourth of women in Turkey and Uzbekistan have used both means.

Table VI.3.1 Percent distribution of ever-married women by use of abortion and/or contraception, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Used neither	10.4	17.4	10.1	15.3
Used only abortion	2.6	1.8	0.3	1.6
Used only contraception	38.0	44.2	66.0	55.9
Used both	49.1	36.7	23.7	27.2
Total	100.0	100.0	100.0	100.0

Number	3585	3022	8074	4043

Table VI.3.2 shows the contraceptive experience of women who had an abortion. Analyses confirm the association between abortion practice and modern contraceptive use. On the other hand use of modern contraceptive methods is lower among women who have never had abortion than the women who had ever had (not shown in the table, 71 percent in Turkey, 70 percent in Kazakhstan, 63 percent in Kyrgyzstan, and 72 percent in Uzbekistan). This suggests that the users of modern contraceptives may have a greater motivation to control fertility.

Table VI.3.2 Percent distribution of ever-married women who had at least one abortion by use of contraception, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Never used	5.0	4.7	1.3	5.6
Used only traditional	4.3	3.8	6.9	4.0
Used modern	90.8	91.6	91.7	90.5
Total	100.0	100.0	100.0	100.0
Number	1851	1161	1934	1163

VI.4 Ethno-cultural variations in abortion practice and contraceptive use

In this part of the thesis, in-country differences of abortion practice and contraceptive use by ethno cultural group are presented. Analyses are given separately for Kazakhstan, Kyrgyzstan, Turkey, and Uzbekistan respectively. Therefore abortion practice and contraceptive use in each country are described with a special emphasis on ethno cultural differences.

VI.4.1 Kazakhstan

In-country variation in Kazakhstan is examined for Kazaks, Russians, and Russian speaking Kazaks (Table VI.4.1.1). When the basic indicators of abortion practice are taken into account, Russians appeared with their high level of abortion use. Percent of women who had at least one abortion among Russians is more than twice of it among Kazaks. On the other hand abortion practice of Russian speaking Kazaks remain between two groups. Repeat abortion is frequent among all three ethno-cultural groups. While almost half of the Kazak women who experienced abortion have had more than one, the corresponding statistic for Russian speaking Kazaks is 61 percent and for Russians is 71 percent. Ranking of the ethno cultural groups is same in terms of abortion per 100 pregnancies and 100 live births. The share of abortion among Russians is highlighted according to analyses. It is calculated that more than half of the pregnancies of Russian women end with abortion. Moreover the number of abortion exceeds the number of live birth for Russian women. The corresponding indicators are much lower for Kazak women, and moderate for Russians speaking Kazaks. Abortion rates confirm the same pattern throughout the ethno-cultural groups. Both TAR and GAR of Russians are as twice as that of Kazaks. When both TAR and TFR among Russians in Kazakhstan are taken into account, it is striking that the number of abortions per women is quite higher than the number of births[16].

Table VI.4.1.1 Basic indicators of abortion practice by ethno-cultural group, KDHS-1999

	Kazaks	Russian speaking Kazaks	Russians	Total
Percent ever aborted	30.1	47.4	68.7	51.6
Repeat abortion	49.2	60.8	71.0	65
Abortion per 100 pregnancy	17.7	32.2	52.6	35.9
Abortion per 100 live birth	24.7	57.5	146.1	64.4
GAR	25	44	55	44
TAR	0.809	1.356	1.974	1.442
Number of ever-married women	1026	817	1497	3585

[16] TFR of Russians in Kazakhstan is 1.4 (Centers for Disease Control and Prevention and ORC Macro 2003).

Number of pregnancies	506	390	541	1544

The general picture of ever use of any method is that a large proportion of women have used contraceptive (Table VI.4.1.2). Merely traditional method use is almost same for three groups, while Russians have slightly higher level of modern method use.

Table VI.4.1.2 Percent distribution of ever-married women by ever use of any contraceptive method and ethno-cultural group, KDHS-1999

	Kazaks	Russian speaking Kazaks	Russians	Total
Never used	20.7	11.7	8.5	13.0
Used only traditional method	6.4	6.3	5.3	6.1
Used modern method	72.9	82.0	86.2	80.9
Number	1026	817	1497	3585

Table VI.4.1.3 shows the current contraceptive use in Kazakhstan. As well as the use of any method, current level of modern method use does not vary much between ethno cultural groups.

Table VI.4.1.3 Contraceptive users per 100 currently married women, by ethno-cultural group, KDHS-1999

	Kazaks	Russian speaking Kazaks	Russians	Total
Any contraceptive	61.3	66.9	70.0	66.1
Modern contraceptive	52.6	55.0	52.2	52.8
Number	916	707	1190	3018

Figures in Table VI.4.1.4 indicate a different pattern then those in Table VI.4.4. Although IUD is the most frequent choice of all three groups, its share differs between ethno cultural groups. While Kazaks and Russian speaking Kazaks seems to be single method user group, Russians appear as multi-method user. Pill, condom, and periodic abstinence are preferred by significant proportion of Russian women but not by the other two groups.

Table VI.4.1.4 Percent distribution of currently married women who use contraception by current contraceptive method and ethno-cultural group, KDHS-1999

	Kazaks	Russian speaking Kazaks	Russians	Total
Pill	1.6	2.5	5.8	3.6
IUD	76.6	68.3	51.7	63.5
Injections	0.9	0.6	1.1	0.9
Diaphragm	0.0	0.2	1.4	0.6
Condom	3.0	7.0	10.1	6.8
Female sterilization	3.7	3.6	4.4	4.2
Male sterilization	-	-	-	-
Periodic abstinence	4.3	5.5	10.2	7.1
Withdrawal	0.7	4.9	6.0	4.4
Other	5.2	5.3	7.3	6.4
Lactational amenorrhea	3.9	2.1	1.9	2.4
Total	100.0	100.0	100.0	100.0
Number	561	473	833	1995

Percent distribution of pregnancies of ever-married women by type of end of pregnancy differs dramatically by ethno cultural groups (Table VI.4.1.5). While three fourth of the pregnancies end with birth among Kazaks, it is more than half among Russian speaking Kazaks, and only one third among Russians. This difference is also dramatic in terms of abortion: one fifth of pregnancies among Kazaks, one third of pregnancies among Russian speaking Kazaks, and half of the pregnancies among Russians end with induced abortion. The shares of spontaneous abortion and stillbirth for Kazaks are lower than other two groups.

Table VI.4.1.5 Percent distribution of pregnancies of ever-married women by pregnancy result and ethno-cultural group, 3 years preceding the survey, KDHS-1999

	Kazaks	Russian speaking Kazaks	Russians	Total
Birth	72.1	52.9	35.7	52.7
Induced abortion	19.6	35.4	50.4	35.9
Spontaneous abortion	7.7	10.5	12.1	10.0
Stillbirth	0.6	1.2	1.9	1.3
Total	100.0	100.0	100.0	100.0
Number	506	390	541	1544

Variation by ethno cultural groups is clearly seen in terms of total number of abortions (Table VI.4.1.6). Both the shares of women who had an abortion and who had more than one abortion are quite different for Kazaks, Russians, and Russian speaking Kazaks. Analyses show that a larger proportion of abortions are concentrated among a small proportion of women for Russians.

Table VI.4.1.6 Percent distribution of ever-married women by total number of induced abortion and ethno-cultural group, KDHS-1999

	Kazak	Russian speaking Kazak	Russian	Total
None	69.9	52.6	31.3	48.4
1	15.3	18.6	19.9	18.3
2-3	11.9	21.5	29.9	22.1
4+	2.9	7.3	18.9	11.2
Total	100.0	100.0	100.0	100.0
Number	1026	817	1497	3585

VI.4.2 Kyrgyzstan

In-country variation in Kyrgyzstan is examined for Kyrgyz, Russians, and Russian speaking Kyrgyz. The level of abortion practice, measured by different indicators, by ethno cultural groups in Kyrgyzstan is presented in

Table VI.4.2.1. All selected indicators confirm that Russians have the highest reliance of abortion. When percent ever aborted is taken into account, it is seen that abortion is more frequent among Russians than the others. Repeat abortion is at the highest level among Russians followed by Russian speaking Kyrgyz. While more than three fourth of Russian and almost three fourth of Russian speaking Kyrgyz have repeat abortion, the corresponding share is half of the Kyrgyz women. Abortion ratios reflect a similar pattern. The percentage of pregnancies that end in abortion is 21 for Kyrgyz, 40 for Russian speaking Kyrgyz, and 59 for Russians. The percent abortion per 100 live births shows the same rank order but more striking. The number of abortion is almost same with the number of live birth among Russian speaking Kyrgyz while it is highly above than the number of live births among Russians. Abortion rates also present important difference between ethno-cultural groups. Based on both TAR and GAR, Kyrgyz have the lowest but Russians have the highest rates. Level of abortion rates of Russian speaking Kyrgyz is between the two groups being closer to Russians'. It should be mentioned that the number of abortions per women at reproductive age is well above the number of births per women among Russians[17].

Table VI.4.2.1 Basic indicators of abortion practice by ethno-cultural group, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
Percent ever aborted	31.3	46.2	65.6	38.4
Repeat abortion	51.8	72.7	78.3	60
Abortion per 100 pregnancy	20.7	39.5	58.6	27.2
Abortion per 100 live birth	30.0	96.3	165.1	39.4
GAR	38	66	72	48
TAR	1.251	*	*	1.553
Number of ever-married women	2211	98	405	3022
Number of pregnancies	1413	64	172	1861

*Number of pregnancies is not enough for calculation

[17] TFR of Russians in Kyrgyzstanis 1.5 (Centers for Disease Control and Prevention and ORC Macro 2003).

The share of women who never used any contraceptive is noticeable in the cases of Kyrgyz and Russian speaking Kyrgyz women; one fifth and one fourth respectively (Table VI.4.2.2). Surprisingly the percentage of non-users is higher and the percentage of modern method users is lower among Russian speaking Kyrgyz women than the other two groups. Analyses show that for all three ethno cultural groups, contraceptive users have predominantly tried modern methods.

Table VI.4.2.2 Percent distribution of ever-married women by ever use of any contraceptive method and ethno-cultural group, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
Never used	21.3	23.7	8.0	19.2
Used only traditional method	7.4	7.7	4.4	6.9
Used modern method	71.3	68.6	87.6	73.9
Total	100.0	100.0	100.0	100.0
Number	2211	98	405	3021

Table VI.4.2.3 shows that current contraceptive use is clearly higher for Russians while that indicator is almost same for all Kyrgyz women. The higher prevalence among Russians continues for modern methods. And all three groups are mainly modern method user in Kyrgyzstan.

Table VI.4.2.3 Contraceptive users per 100 currently married women by ethno-cultural group, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
Any contraceptive	56.8	57.2	71.2	59.5
Modern contraceptive	46.9	49.2	58.3	48.9
Number	1988	77	347	2675

When current methods choice is examined method by method, variation between ethno-cultural groups is much clearer than that of method type (Table.VI.4.2.4). The first remarkable difference is seen in the share of

IUD. In spite of the fact that IUD is the most popular method among the three groups, it is lonely dominant method for Kyrgyz while it is followed by condom with a quite high share in the cases of Russians, and Russian speaking Kyrgyz. The other notable difference is in the share of two traditional methods, periodic abstinence and withdrawal. Kyrgyz prefer withdrawal while Russians prefer periodic abstinence. Russian speaking Kyrgyz have moderate level in the use of both methods.

Table VI.4.2.4 Percent distribution of currently married women who use contraception by current contraceptive method and ethno-cultural group, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
Pill	2.1	(4.5)	6.9	2.9
IUD	68.2	(59.1)	45.2	64.2
Injections	2.6	(2.3)	0.8	2.2
Diaphragm	1.9	(0.0)	0.8	0.2
Condom	5.0	(20.5)	25.0	9.6
Female Sterilization	3.1	(0.0)	3.2	3.0
Male Sterilization	0.0	(0.0)	0.0	-
Periodic Abstinence	3.3	(6.8)	12.5	5.4
Withdrawal	11.4	(4.5)	3.6	10.1
Other	2.4	(2.3)	2.0	2.5
				-
Total	100.0	100.0	100.0	100.0
Number	1151	44	247	1592

Result of pregnancies for 3 years preceding the survey is presented in Table VI.4.2.5. Majority of the pregnancies ends with birth for Kyrgyz but with induced abortion for Russians, while Russian speaking Kyrgyz have almost same number of births and induced abortion. Spontaneous abortion has higher share for all Kyrgyz women.

Table VI.4.2.5 Percent distribution of pregnancies of ever-married women by pregnancy result and ethno-cultural group, 3 years preceding the survey, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
Birth	68.9	41.0	35.5	63.0
Induced abortion	20.7	39.5	58.6	27.2
Spontaneous abortion	9.5	17.8	5.3	9.0
				0.8
Total	100.0	100.0	100.0	100.0
Number	1413	64	172	1861

Russians again appeared with their common use of abortion in Table VI.4.2.6 both in terms of ever use and number of abortion. The percent distribution of women who had only one abortion does not significantly differ between three groups but repeat abortion is dramatically higher for Russians especially for fourth and later abortions.

Table VI.4.2.6 Percent distribution of ever-married women by total number of induced abortion and ethno-cultural group, KRDHS-1997

	Kyrgyz	Russian speaking Kyrgyz	Russian	Total
None	68.7	53.8	33.4	61.6
1	15.1	12.6	14.4	15.4
2-3	13.5	25.1	32.1	17.3
4+	2.7	8.5	20.0	5.7
Total	100.0	100.0	100.0	100.0
Number	2211	98	405	3021

VI.4.3 Uzbekistan

In-country variation in Uzbekistan is examined for Uzbeks, Russians, and Russian speaking Uzbeks. Since sample size of last two groups is small, some of the analyses could not been performed for Russians and Russian speaking Uzbeks. As it was seen the cases of Kazakhstan, and

Kyrgyz Republic, abortion is more frequent among Russian women in Uzbekistan (Table VI.4.3.1). While half of the Russian women had an abortion, the corresponding statistic is one quarter among both groups Uzbeks. Level of abortion practice of Uzbeks and Russian speaking Uzbeks is more similar to each other comparing other Central Asian countries. The most probable reason of this fact is the lower share of Russian in Uzbekistan. It is expected that the lower share in the total population cause a minor influence in culture of the country. Ethno cultural differences in the repeat abortion are not as great as it is for percent ever aborted; 55 to 61 percent of women who had abortion have experienced more than one. Abortion ratios and abortion rates could not been calculated for Russian because of inadequate sample size. Despite slightly high ratio of abortion per 100 pregnancies and live births among Russian speaking Uzbeks, two groups of Uzbeks, regardless of their language of use, present a similar pattern in the abortion practice bases on selected ratios and rates.

Table VI.4.3.1 Basic indicators of abortion practice by ethno-cultural group, UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
Percent ever aborted	27.7	25.2	55.5	28.8
Repeat abortion	55.2	57.9	60.7	47
Abortion per 100 pregnancy	20.1	24.9	*	20.2
Abortion per 100 live birth	27.8	35.0	*	28.6
GAR	28	28	*	27
TAR	1,016	0,960	*	0.953
Number of ever-married women	3157	302	111	4043
Number of pregnancies	1683	132	30	2061

*Number of pregnancies is not enough for calculation

Figures in Table VI.4.3.2 show that, for all three ethno cultural groups, the shares of nonusers and modern method users are close to each other. Of the women who have ever used contraceptive, almost all have used modern contraception. Users of only traditional method are slightly higher among Uzbek women.

Table VI.4.3.2 Percent distribution of ever-married women by ever use of any contraceptive method and ethno-cultural group UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
Never used	16.6	17.4	15.9	16.9
Used only traditional method	6.2	2.8	1.7	5.7
Used modern method	77.2	79.8	82.4	77.4
Total	100.0	100.0	100.0	100.0
Number	3157	302	111	4042

Table VI.4.3.3 presents the current contraceptive use. More surprisingly current use of any method and modern method is higher among Uzbeks than Russians. This differentiation is clear in terms of modern method use. Russian speaking Uzbeks are followed by Uzbeks and than Russians in modern method prevalence.

Table VI.4.3.3 Contraceptive users per 100 currently married women by ethno-cultural group, UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
Any contraceptive	68.1	70.8	57.3	67.7
Modern contraceptive	63.6	65.3	46.7	60.0
Number	2958	273	86	3720

When the detailed contraceptive mix is examined, it is seen that IUD is the most common method for all three groups. Among Russian women IUD is followed by condom and periodic abstinence with their share at 10 percent. On the other hand among two groups of Uzbek none of the method except than IUD appears as popular.

Table VI.4.3.4 Percent distribution of currently married women who use contraception by current contraceptive method and ethno-cultural group, UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
Pill	2.2	3.1	(6.1)	2.4
IUD	77.2	78.2	(57.1)	76.5
Injections	3.1	2.1	(0.0)	3.0
Diaphragm	-	-	-	0.0
Condom	2.4	3.6	(10.2)	3.0
Female Sterilization	4.0	2.6	(6.1)	3.8
Male Sterilization	-	-	-	-
Periodic Abstinence	1.4	2.1	(10.2)	1.6
Withdrawal	4.9	5.2	(2.0)	5.2
Other	.3	.5	(8.1)	0.4
Lactational amenorrhea	4.5	2.6	(0.0)	4.1
Total	100.0	100.0	100.0	100.0
Number	2015	193	49	2518

Analyses of the type of end pregnancies confirmed the difference between Russian and both Uzbek groups (Table VI.4.5). While three fourth of all pregnancies end with birth among Uzbeks and Russian speaking Uzbeks, less than half of the pregnancies end with birth among Russians. Ethno cultural variation is also similar for the share of abortion.

Table VI.4.3.5 Percent distribution of pregnancies of ever-married women by pregnancy result and ethno-cultural group, 3 years preceding the survey, UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
Birth	72.3	71.2	(47.4)	71.9
Induced abortion	20.1	24.9	(48.5)	20.2
Spontaneous abortion	6.9	3.9	(1.9)	7.1
Stillbirth	0.8	0.0	(2.2)	0.8
Total	100.0	100.0	100.0	100.0
Number	1683	132	30	2061

Ethno-cultural differences are more obvious in terms of number of abortions (Table VI.4.6). Higher percent of Russian women had both first and later order abortions in Uzbekistan. Second and later order abortions are slightly more frequent among Uzbeks than Russian speaking Uzbek.

Table VI.4.3.6 Percent distribution of ever-married women by total number of induced abortion and ethno-cultural group, UHES 2002

	Uzbek	Russian speaking Uzbek	Russian	Total
None	72.3	74.8	44.5	71.2
1	15.0	15.0	22.4	15.4
2-3	10.3	7.5	21.4	10.6
4+	2.4	2.8	11.7	2.8
Total	100.0	100.0	100.0	100.0
Number	3157	302	111	4042

VI.4.4 Turkey

Table VI.4.4.1 shows that all indicators of abortion practice differ significantly by ethno-cultural groups in Turkey. According to percent ever aborted, Turkish women have higher level of abortion practice than Kurdish women. On the other hand level of abortion among Turkish speaking Kurdish women is between Turkish and Kurdish women. Difference between three groups has decreased for repeat abortion. One third of Kurds and almost half of Turks and Turkish speaking Kurds have repeat abortion. When abortion ratios are taken into account, both ratios are higher among Turkish speaking Kurds and Turks than Kurds. The remarkable point here is the similarity of the ratios for Turks and Turkish speaking Kurds.

Turkish speaking Kurds display as a transitional group in accordance with their ever use of any contraceptive method. Table VI.4.4.2 shows that the difference between Turkish and Kurdish women in the percent distribution of ever-married women by ever use of any contraceptive method is noticeably high. Difference is not great in terms of only traditional method

use but very high in terms of modern method use. Level of modern method use among Turkish speaking Kurds are similar with Turks.

Table VI.4.4.1 Basic indicators of abortion practice by ethno-cultural group, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds	Total
Percent ever aborted	26.2	20.6	9.5	23.9
Repeat abortion	42.4	47.1	32.6	42
Abortion per 100 pregnancy	14.1	13.5	4.0	11.8
Abortion per 100 live birth	18.8	17.9	4.9	14.6
GAR	12	14	6	11
TAR	0.396	0.687	0.233	0.385
Number of ever-married women	6646	446	787	8074
Number of pregnancies	2199	266	551	3109

Table VI.4.4.2 Percent distribution of ever-married women by ever use of any contraceptive method and ethno-cultural group, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds	Total
Never used	7.7	14.6	30.7	10.4
Used only traditional method	13.8	12.1	15.6	13.9
Used modern method	78.6	73.3	53.6	75.7
Total	100.0	100.0	100.0	100.0
Number	6648	446	787	8075

Variation between ethno cultural groups in the level of current contraceptive use is consistent with ever use of contraceptive (Table VI.4.4.2). Both for use of any contraceptive and use of modern method, Turks have the highest level; Kurds have the lowest level while Turkish speaking Kurds have the moderate level. Besides the significant difference in percent using contraception at time of the survey, almost two thirds of the method users prefer modern methods in all three groups (Table VI.4.4.3).

Table VI.4.4.3 Contraceptive users per 100 currently married women by ethno-cultural group, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds	Total
Any contraceptive	74.3	63.5	48.7	71.0
Modern contraceptive	45,4	38,7	28,1	43.1
Total	100.0	100.0	100.0	100.0
Number	6300	419	762	7672

The detailed pattern of contraceptive mix by ethno cultural groups is presented in Table VI.4.4.4. Figures show that there is no significant discrepancy in the rank of the share of methods for all three ethno cultural groups, although the proportions of method users differ necessarily. In all groups, women are concentrated in the withdrawal use category, followed by IUD. It should be noticed that proportions of women who have been sterilized are almost same in spite of the difference in the general level of modern contraceptive use.

Table VI.4.4.4 Percent distribution of currently married women who use contraception by current contraceptive method and ethno-cultural group, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds	Total
Pill	6.5	3.9	8.8	6.6
IUD	29.1	31.5	21.6	28.5
Injections	0.4	1.5	2.1	0.6
Diaphragm	0.9	1.1	0.6	0.8
Condom	15.9	11.9	8.8	15.2
Female Sterilization	7.7	7.5	11.1	8.0
Male Sterilization	0.1	0.0	0.0	0.1
Periodic Abstinence	1.8	1.1	0.6	1.5
Withdrawal	36.7	39.5	41.7	37.2
Other	0.5	0.3	0.2	0.6
Lactational amenorrhea	0.4	1.8	4.5	0.8
Total	100.0	100.0	100.0	100.0
Number	4675	279	371	5447

Analyses show that percent distributions of pregnancies end with live birth and induced abortion are almost same for Turkish and Turkish speaking Kurdish women (Table VI.4.4.5). On the other hand Kurdish women have higher percent of birth and lower percent of abortion. The share of spontaneous abortion and stillbirth are slightly higher among Kurdish women.

Table VI.4.4.5 Percent distribution of pregnancies of ever-married women by pregnancy result and ethno-cultural group, 3 years preceding the survey, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds
Birth	75.0	75.6	82.2
Induced abortion	14.1	13.5	4.0
Spontaneous abortion	9.9	9.4	11.4
Stillbirth	1.0	1.5	2.4
Total	100.0	100.0	100.0
Number	2199	266	551

Besides the significant difference between ethno cultural groups in the share of women who has performed abortion, the total number of abortion also vary in Turkey (Table VI.3.6). Higher order abortions are more frequent among Turks. Turkish speaking Kurds again act as a transitional group between Turks and Kurdish speaking Kurds.

Table VI.4.4.6 Percent distribution of ever-married women by total number of induced abortion and ethno-cultural group, TDHS-2003

	Turks	Turkish speaking Kurds	Kurds	Total
None	73.8	79.4	90.5	76.1
1	15.1	10.9	6.4	13.8
2-3	9.4	8.3	2.5	8.6
4+	1.7	1.4	0.6	1.5
Total	100.0	100.0	100.0	100.0
Number	6646	446	787	8075

CHAPTER VII MULTIVARIATE ANALYSES

This chapter aims to analyse covariates of abortion practice and contraception use. Therefore predictors of ever having an abortion and current use of contraception are determined. Multivariate logistic regression procedure is used to analyse the covariates. Before employing logistic regression, linear regression is used to discover collinearity between independent variables. Collinearity indicates the exact linear combination of one of the predictors with the others (Kleinbaum et. al. 1998). Collinearity is the undesirable situation when one independent variable is a linear function of other independent variables. Variance inflation factors (VIF) and tolerances for individual variables are collinearity diagnostics in a multiple regression analysis. Variables with VIF higher than 10.0 and with tolerance close to 0.00 have collinearity with each other (Kleinbaum et. al.1998).

Dependent variable of the linear regression model is the *total number of abortion*. A continuous type of variables is preferred as the dependent variable of a linear model. However for some of the variables, their continuous type is not available in the data. Instead of those categorical independent variables[18], dummy variables are created. Utilizing dummy variables allows us to use categorical predictors in linear regression model. In accordance with the aim of employing linear regression in this thesis, linear regression collinearity statistics of total number of abortion are presented in this chapter. Detailed descriptive and model statistics of linear regression are presented in Appendix III.

VII.1 Results of linear regression: collinearity diagnosis

According to collinearity statistics (tolerance and VIF) which are presented in Table VII.1, collinearity exists between same variables in all four data set. These variables are as follows. Regarding the collinearity statistics, variables "total children ever born" and "number of living children"

[18] Definitions and categories of dummy variables are presented in Chapter 5. Methodology.

have collinearity. And three other variables, “age at first marriage”, “years since first marriage”, and “current age” also have collinearity. Furthermore a dummy variable “countryside” (a category of variable “de facto place of residence”) is excluded by the program because of its perfect collinearity (the tolerance goes to 0 and VIF goes to infinity) in the cases of Kyrgyzstan and Turkey. This variable has perfect collinearity with “type of place of residence” which is excluded in the case of Kazakhstan and has high VIF score in the case of Uzbekistan. Finally, variable “current use of contraception” has perfect collinearity with the dummy variable intend to use contraception (a category of variable “contraceptive use and intention”). The first one is excluded in the cases of Kazakhstan and Turkey while the second one is excluded in the case of Kyrgyzstan.

From the first set of variables which have collinearity, “number of living children” is preferred for the further logistic models while total number of children is excluded. This decision is based on the literature that confirms “number of living children” as more important in the fertility preference than total number of children. It is also a well known fact that couples have tendency to replace deceased children.

From the second set of variables “years since first marriage” is removed while “age at first marriage” and “current age” are selected for logistic regression model. After the elimination of “years since first marriage”, collinearity is disappeared between “age at first marriage” and “current age”. Sexuality, fertility and therefore fertility control become significant issues in women’s life after marriage in all four studied countries. And also surveys show that marriage is almost universal and the share of ever married women increases by age in this region. Another advantage of variable age at first marriage is that it is not time dependent. It is a lifetime constant value and it does not change in time. Therefore it can be unquestionably used in the analysis of time dependent events. Women do not automatically become users of contraceptive methods by marriage but they necessarily include into exposure of reproduction in the region. For those reasons, age of marriage indicates exposure of women to idea of

fertility control. So, age at first marriage is a significant indicator both for abortion practice and contraceptive use in the studied countries.

In the third set of variables *de facto place of residence* refers the place of residence of the selected household not necessarily the women. Therefore *type of place of residence* is used in logistic regression while *de facto place of residence* is excluded.

In the last group *current use of contraception* is a variable based on behaviour while *contraceptive use and intention* is a variable based on both behaviour and attitude. Since the variable *current use of contraception* will also be employed as dependent variable in logistic regression and structural model, *contraceptive use and intention* is excluded.

Sample size for linear regression is 2532, 2153, 3299, and 3518 respectively for Kazakhstan, Kyrgyzstan, Turkey, and Uzbekistan. Missing cases are the women who are not married at the time of the survey or were sterilized for Central Asian countries. In the case of Turkey, some questions, related to attitudes toward child bearing, abortion, and contraception, were asked to a sub-sample of ever-married women. Therefore analyses involving those variables are based on a smaller sample size. Collinearity is diagnosed with a linear regression model which involves variables which were asked to sub-sample[19].

[19] Sub-sample is approximately half of the whole sample size.

Table VII.1.1 Linear regression collinearity statistics of total number of abortion for currently married women, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

	Kazakhstan		Kyrgyzstan		Turkey		Uzbekistan	
Independent variables	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF		
Worked in the past year	.921	1.086	.840	1.191	.829	1.207	.969	1.032
Currently working	.792	1.263	.739	1.353	.688	1.454	.866	1.155
Kurd/Russian	.417	2.400	.527	1.897	.620	1.612	.807	1.239
Turkish speaking Kurd/Russian speaking..	.616	1.623	.899	1.112	.877	1.140	.917	1.091
Total children ever born	*.094*	*10.585*	.088	11.313	*.077*	*12.958*	.087	11.505
Number of living children	*.095*	*10.571*	.088	11.332	*.078*	*12.862*	.090	11.098
Wealth index (factor score)	.699	1.431	.821	1.219	.490	2.042	.643	1.556
Health insurance	na	na	na	na	.848	1.179	na	na
Social security	na	na	na	na	.644	1.554	na	na
House ownership	na	na	na	na	.869	1.151	.895	1.118
Woman's life style index (factor score)	.869	1.151	na	na	.454	2.202	.702	1.424
Education in single years	.827	1.209	.761	1.315	.407	2.455	.694	1.441
Age at first marriage	*.022*	*44.540*	.032	30.917	*.017*	*59.120*	.765	1.308
Years since first marriage	*.004*	*251.861*	.004	264.276	*.003*	*354.817*		
Type of marriage	na	na	na	na	.817	1.224	.910	1.099
Household composition at the time of marriage	na	na	na	na	.729	1.372	.671	1.490
Consanguinity	na	na	na	na	.908	1.101	.949	1.054
Bride money	na	na	na	na	.745	1.343	na	na
Current age	*.004*	*270.147*	.004	276.585	*.003*	*317.977*	.355	2.820
Type of place of residence	*excluded*	*excluded*	.314	3.182	.485	2.061	.005	185.469
Type of place of childhood residence	.695	1.439	.692	1.444	.670	1.493	.453	2.206
Small city	.794	1.259	.513	1.948	.679	1.473	.529	1.889
Town	.712	1.405	.599	1.669	.790	1.265	.770	1.299
Countryside	.459	2.178	*excluded*	*excluded*	*excluded*	*excluded*	.005	185.255
Ever use of contraception	.639	1.564	.596	1.677	.643	1.556	.548	1.825
Current use of contraception	*excluded*	*excluded*	.569	1.757	*excluded*	*excluded*	.608	1.644
Intend to use contraception	.785	1.273	*excluded*	*excluded*	.766	1.306	na	na
Not intend to	.618	1.619	.543	1.840	.659	1.518	na	na
Ideal number of children	.658	1.519	.554	1.806	.796	1.256	na	na
Want more children	.607	1.647	.477	2.096	.546	1.832	na	na
Approve of abortion	.849	1.178	.905	1.105	.772	1.295	na	na
Consider of abortion	.791	1.265	.729	1.372	.732	1.366	na	na
Approve of contraception	.896	1.115	.920	1.087	.462	2.165	na	na
Approve of contraception by husband	.863	1.158	.870	1.149	.462	2.163	na	na

a: Dependent Variable: total number of induced abortion

VII.2 Results of logistic regression

Two logistic models, one for dependent variable ever had abortion and one for dependent variable current use of contraception, are developed for all four countries. Before moving to the individual analysis of each country, it is informative to evaluate the summary statistics of the logistic models. Omnibus tests of model coefficients show that logistic models of all four model are statistically significant with the mentioned chi squared values (p=0.000) (Table VII.2.1 and Table VII.2.2). Statistics in these tables also confirm the accuracy of the models.

Selected cases included in the analysis are ever married women for the logistic model of ever had abortion and currently married women for the logistic model of current contraceptive use.

Covariates of ever having abortion and current use of contraception are analysed by multivariate logistic regression procedure and presented in terms of odds ratios[20] in Table VII.3.1 and Table VII.4.1 Results of logistic regression models allow us to compare significant covariates of abortion and contraception not only in country itself but also between four countries. The former, comparing covariates of abortion and contraception within country, enables a sufficient baseline to discuss diversification in the covariates of likelihood of having abortion and using contraception while the latter, comparing between countries, gives opportunity to discuss cross-country acceptability of this diversification.

[20] Odds ratio is the ration of the probability that some event will occur divided by the probability that the same event will not occur (Kleinbaum et. al. 1998)

Table VII. 2.1 Model fit measures of ever having had an abortion for ever-married women, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

Covariate	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Percent included in analysis	89.4	87.4	40.9	82.7
Chi squared	1049	832	746	668
Significance	0.000	0.000	0.000	0.000
Nagelkerte R squared	0.376	0.367	0.300	0.248
Percent predicted	74.1	75.2	75.8	73.0
Number of women in the model	3181	2635	3303	3324

Table VII.2.2 Model fit measures of contraceptive use for currently married women, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

Covariate	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Percent included in analysis	89.5	87.8	42.9	84.0
Chi squared	325	393	599	607
Significance	0.000	0.000	0.000	0.000
Nagelkerte R squared	0.158	0.206	0.241	0.237
Percent predicted	70.0	69.2	77.3	75.6
Number of women in the model	2639	2351	3298	3079

VII.3 Covariates of ever having abortion

When the odd ratios of the logistic model of all four countries are generally evaluated, it is seen that *number of living children, ever use of method, wealth, consider of abortion in case of unwanted pregnancies*, and *ethno-cultural characteristic* are strongly associated with having abortion. Other covariates are either insignificant/unavailable in all countries or significant only in some particular countries.

Based on KDHS-1999, 3181 cases out of 3557 total cases are included in the logistic regression analysis. In other word, 10.6 percent of all cases cannot be examined in the model. Most of the missing cases are the ones with missing ethno-cultural characteristics. On the other hand the examined cases are quite enough for the analysis. Moreover, accuracy degree of the model is good enough; 74 percent of the predicted value corrects the observed value (Table VII.2.1). Nagalkerke R square, the model fit measure, shows that logistic model can estimate 38 percent of the variation in ever having abortion in Kazakhstan.

Odds ratios of ever having had abortion in the case of Kazakhstan show us that ever use of contraception has the strongest effect in the probability of the event. Women who *ever used contraception* have 4 times higher probability to have abortion than women who never used contraception. Another significant fertility related covariate is *number of living children*. Results of the analysis are evidence for likelihood of having abortion increases among women who had two children and the same probability presents a small decrease after second child.

Working status is also important in the probability of abortion practice; women who were working during the one-year time of the survey have 1.188 times higher probability to ever had abortion than women who never worked. Additionally, wealth appears as significant covariate; one unit change in the wealth index increases the abortion probability 1.198 times.

Another significant predictor of ever had abortion is *age at first marriage*. According to odds ratios; women, experienced marriage in their early ages, have lower risk to practice abortion. Regression result of *women's life style* shows that risk of having abortion among women from high status group is less than half of that of women from low status group.

Three covariates as regards attitude are significant on the likelihood of having abortion. The first one is the *desire for more children*; the probability to have an abortion among women who want to limit their childbearing is half of that of women who want to have a child now. Women who want space childbearing have also lower probability. It is almost three third of the probability of women who want more children. *Approve abortion* and *consider abortion in case of unintended pregnancy* are also significant variables for abortion practice. Women who approve abortion have 1.221 times more likely to have had abortion than women who do not approve. The second one has stronger effect; abortion probability of women who consider abortion in case of unwanted pregnancy is almost twice of that of women who do not.

Furthermore ethno-cultural characteristics with its all categories have strong effect on the dependent variable. Likelihood of having abortion among Russians is 3.861 times higher than that of among Kazakhs. For Russian speaking Kazakhs, same probability is significantly lower than Russian but higher than Kazakhs.

Summary statistics of logistic regression of ever had abortion based on KRDHS-1997 show that 87 percent of all cases (2635 out of 3014) are included in the analysis. The number of cases included in the analysis is high enough. Furthermore, logistic model expresses the high degree of accuracy; 75 percent of the predicted value corrects the observed value (Table VII.2.1). Finally, Nagalkerke R square demonstrates that logistic model can estimate 37 percent of the variation in ever having abortion in Kyrgyzstan.

The strongest predictor of ever had abortion is *ever use a method*. Likelihood of having abortion is 4.750 times higher for women who ever used contraceptive methods than women who never used. Just like in the case of Kazakhstan *number of living children* appears as another significant fertility related covariate in Kyrgyzstan. Odds ratios prove that likelihood of having abortion increases among women who had two children as three times as among women who had less than two children. The same probability presents a small decrease after second child and reaches the twice of that of reference group.

Another significant covariate of abortion experience is *type of place of residence*. Regression results figure out that women who live in urban area have 1.650 times higher probability of ever had abortion than women who live in rural area.

Besides *contraception, number of living children* and *residence*, *wealth* appears as significant predictor; one unit change in the wealth index 1.202 times increases the abortion probability.

When the effect of fertility preference is evaluated, it is seen that women who wish to have more children have quite higher probability than women who want to limit or space their fertility. Attitude towards abortion is also significant in abortion probability. Likelihood of ever had abortion among women who approve abortion is 1.710 times of that of among women who do not approves. Another significant predictor is *considering abortion*. Women who consider abortion in case of unwanted pregnancy are 2.130 times more likely to be experienced abortion.

Last but not least ethno-cultural characteristics are influential in the likelihood of having abortion. Comparing with Kyrgyz, probability of Russians is 3.704 times and probability of Russian speaking Kyrgyz is 2.081 times higher.

For Turkey number of missing cases seems to be quite high, since attitude questions which were employed in regression analysis are asked to a sub-sample. In spite of this reduction, the number of cases included in the analysis is still high enough. Moreover, logistic model expresses a high degree of accuracy; 79 percent of the predicted value corrects the observed value (Table VII.2.1). An important model fit measure, Nagalkerke R square shows that logistic model can estimate 30 percent of the variation in ever having abortion in Turkey.

When the odds ratios of each covariate are assessed in detail, it is seen that the strongest association is regarding to *ever use of method*. Figure shows that the likelihood of having abortion for women ever used contraception is 3.861 times as high as that for women never used contraception. *Age* and *age at first marriage* are also statistically significant on ever had an abortion. The probability of having an abortion increases by age while one unit decrease in *age at marriage* causes 10 percent decrease in the same probability.

Other significant covariate of having abortion is *number of living children*. Women who have two children have 1.548 times; women who have more than two children have 1.746 times more likely to have had abortion than women who have less than two children. In other words, increase in number of living children causes an increase in the likelihood of having an abortion.

It is unexpected that women who spend their childhood in rural areas have higher probability to have an abortion than women who spend their childhood in urban areas. On the other hand, current type of place of residence has not significant effect on abortion probability.

Likelihood of having abortion shows significant association with all categories of wealth status. Odds ratio of event among richest group is more than twice that of among poorest group. Except than the middle wealth group, which present a slow decrease, probability of having abortion

increases by increase in wealth status. Other than wealth index, house ownership is also significant in the logistic model of abortion. The probability of having abortion of women who themselves or a person from her family own their house is 0.768 times less than that of women who does not own the house.

Probability of having an abortion does not present a disparity regarding women life style index but working status of women. Women who are currently working or worked in the last year are 1.261 times more likely to have had abortion than women who never worked.

Only one covariate of attitude appears as statistically significant. Women who consider abortion in case of unwanted pregnancy have almost three times higher probability of having abortion than reference group.

Ethno-cultural background is significant according to the logistic model. The probability of having abortion of Kurds is half of that of Turks. Difference between Turks and Turkish speaking Kurds is not significant.

Based on UHES-2002, 3324 cases out of 4019 total cases are included in the logistic regression analysis. In other word, 17.3 percent of all cases cannot be examined in the model. The missing cases due to missing ethno-cultural characteristics are quite numerous since women who belong to language group other than two most popular languages, titular/Uzbek and Russian, have higher share than the other Central Asian countries. On the other hand the examined cases are high enough for the analysis. Moreover, accuracy degree of the model is good enough; 73 percent of the predicted value corrects the observed value (Table VII.2.1). Nagalkerke R square, the model fit measure, shows that logistic model can estimate 25 percent of the variation in ever having abortion in Uzbekistan.

As same as for the previous three countries, two fertility related covariates, *contraception* and *number of living children*, appear as statistically significant for Uzbekistan. According to odds ratios, women who

ever used any contraceptive method have 2.752 times higher risk for ever having had abortion than women who never used contraceptive. Corresponding statistics confirm the increasing probability of the event by number of living children. Likelihood of abortion experience is as 3.092 times higher among women who have more than two living children, and 2.538 times higher among women who have two living children than that of among women who have less than two living children.

Analysis shows that *age of women* increases the likelihood of having abortion in the cases of Uzbekistan. On the other hand *age at first marriage* has an opposite effect; increase in the marriage age link to a decrease in the likelihood of having abortion.

Effect of *residence* on abortion experience in Uzbekistan is similar with that of in Kyrgyzstan. Women who live in urban area are 1.554 times more likely to have experienced abortion than women who live in rural area.

Moreover, *working status* and *women's life style* are statistically significant according to the logistic model. Women who are working at the time of the survey or worked in the previous year of the survey have 1.219 times higher probability than women who never worked. On the other hand probability of ever having had an abortion decreases with the increase in women life style. Comparing the low status group, women who belong to middle status group have 0.668 times, and women who belong to high status group have 0.597 times as the probability of having abortion.

Another significant covariate of ever having had abortion is wealth not for all but two highest rank categories. The likelihood of experiencing abortion is lower for the rich and the richest group than then poorest group (0.727 and 0.547 odds ratios respectively).

Out of marriage related three predictors; *type of marriage, household composition at the time of marriage*, and *consanguinity*, *type of marriage* appears to be significant on dependent variable. Women whose marriages

are arranged by themselves and their partner have higher probability to experience abortion.

Finally, ethno-cultural characteristics also have significant relationship with probability of having had abortion. Disparity among ethno-cultural group becomes visible between Uzbeks and Russians but not Russian speaking Uzbeks. Russian women are 2.643 times more likely to have had abortion than Uzbek women.

Table VII.3.1 Odds ratios of ever having had an abortion for ever-married women, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

Covariate	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Age (in single years)	1.095**	1.080**	1.075**	1.055**
Education (years of schooling)	0.968	1.008	1.002	1.013
Childhood place of residence				
Rural	1.000	1.000	1.000	1.000
Urban	0.952	0.843	0.753**	1.117
Residence				
Rural	1.000	1.000	1.000	1.000
Urban	1.129	1.650**	1.289*	1.554**
Number of living children				
Less than 2	1.000	1.000	1.000	1.000
2	1.931**	2.932**	1.548**	2.538**
More than 2	1.709**	2.106**	1.746**	3.092**
Ever use a method				
No	1.000	1.000	1.000	1.000
Yes	3.958**	4.750**	3.861**	2.752**
Working status				
Never worked	1.000	1.000	1.000	1.000
Currently working or worked in the last year	1.188**	1.068	1.261*	1.219*
Wealth index**	1.198**	1.202**		
Poorest			1.000	1.000
Poor			1.714**	1.064
Middle			1.582*	0.986
Rich			2.098**	0.727*
Richest			2.295**	0.547**
Social security	na	na	1.311	na
Health insurance	na	na	1.034	na
House ownership	na	na		
Not owned			1.000	1.000
Owned			0.768**	1.330
Women's life style index		na		
Low	1.000		1.000	1.000
Middle	0.899		1.012	0.668**
High	0.464**	na	0.091	0.597**
Age at first marriage (in single years)	0.902**	0.976	0.895**	0.951**
Type of marriage	na	na	1.101	0.839*
Household composition at the time of marriage	na	na	0.827	0.955
Consanguinity	na	na	1.106	1.174
Bride money	na	na	0.897	na
Desire for more children				na
Yes, now	1.000	1.000	1.000	na
Yes, later	0.725*	0.666*	1.025	na
No more	0.517**	0.566**	1.285	na
Approve of contraception	0.970	1.787	0.882	na
Approve of abortion	1.221**	1.710**	1.117	na
Consider abortion in case of unwanted pregnancy	1.945**	2.130**	2.809**	na
Ethno-cultural characteristic				
Kazakhs	1.000	1.000	1.000	1.000
Russians	3.861**	3.704**	0.472**	2.643**
Russian speaking Kazakhs	1.926**	2.081**	0.886	0.743
Kyrgyz		1.000		
Russians		3.704**		
Russian speaking Kyrgyz		2.081**		
Turks			1.000	
Kurds			0.472**	
Turkish speaking Kurds			0.886	
Uzbeks				1.000
Russians				2.643**
Russian speaking Uzbeks				0.743
Constant	-3.062	-5.789	-4.469	-3.294**
Number of women in the model	3181	2635	3303	3324

*significance<0.05 **significance<0.01 na=not available

**continuous factor score for the cases of Kazakhstan and Kyrgyzstan; categorical for the cases of Turkey and Uzbekistan.

VII.4 Covariates of contraceptive use

When the odd ratios of the logistic model of current contraceptive use of all four countries are generally evaluated, it is seen that *number of living children, desire for more children*[21] and *approve contraception*[22] are strongly associated with contraceptive use. Besides these, ethno-cultural characteristics are significant for countries with the exception of Uzbekistan. Other covariates are either insignificant/unavailable in all countries or significant only in some particular countries.

Based on KDHS-1999, 2639 cases out of 2950 total cases are included in the logistic regression analysis showing that 10.5 percent of all cases cannot be examined in the model. The number of cases is quite sufficient. Moreover, accuracy degree of the model is good enough; 70 percent of the predicted value corrects the observed value (Table VII.2.2). Nagalkerke R square, the model fit measure, shows that logistic model can estimate 16 percent of the variation in contraceptive use in Kazakhstan.

Starting from predictors which are related to fertility experience of women, *number of living children* is strongly associated with contraceptive use. Odds ratios confirm that probability to use contraceptive method is 2.279 times higher among women who have two living children and 2.856 times higher among women who have more than two living children than that of among women who have less than two children. Another fertility related covariate, *ever had abortion* is also significant on contraception. Women who ever had abortion are 1.440 times more likely to use contraceptive method.

Fertility preference appears as significant for contraception in the logistic model. Odds ratios show that women who desire to have children within two year have lowest probability to use contraceptive method. The

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[21] *Desire for more children* is not available in the case of Uzbekistan.

[22] *Approve contraception* is not available in the case of Uzbekistan.

same statistic is 3.258 times higher for women who want to space their birth and 2.113 times higher for women who want to limit their birth than the reference group.

Another group of significant covariates is related to attitudes toward contraception and abortion. In this category, three predictors; *approve contraception, approve abortion*, and *consider abortion* are associated with contraception. Women who approve contraception are 2.467 times more likely to use contraception than women who do not approve. Moreover, women who consider abortion in case of unwanted pregnancy are 1.912 times more likely to use contraception. The situation is controversy for women who approve abortion. This group have 25 percent lower probability to use contraception than women who do not approve abortion.

Additionally, *working status* of women is significant on contraception according to the logistic model. Comparing with women who never worked, probability to use contraceptive is 1.115 times higher for women who are currently working or worked in the last two year.

When *age at first marriage* is considered, there exists a small disparity in terms of the probability to use contraceptive method. One year increase in the age at first marriage causes 1.074 times increase in the probability of use.

Furthermore the effect of ethno-cultural characteristics is evaluated. Significant discrepancy is seen between Kazaks and Russians on the likelihood of using contraception. According to odds ratio, Russian women are 1.391 times more likely to use contraceptives than Kazak women.

Summary statistics of logistic regression of contraceptive use based on KRDHS-1997 show that 88 percent of all cases (2351 out of 2677) are included in the analysis. The number of cases included in the analysis is high enough. Furthermore, logistic model expresses the high degree of accuracy; 69 percent of the predicted value corrects the observed value

(Table VII.2.2). Finally, Nagalkerke R square demonstrates that logistic model can estimate 21 percent of the variation in current use of contraception in Kyrgyzstan.

Similar with Kazakhstan, *number of living children* and *ever had abortion* are strongly associated with contraceptive use. When *number of living children* is considered, it is seen that women who have two children are 3.514 times more likely to use contraceptive compared to women who have less than two children. Disparity is stronger for women with more than two children. Their probability to use contraceptive is 7.755 times higher than that of women with less than two children. Other strong relation is observed with abortion experience and contraceptive use. In particular having abortion increases the likelihood of using contraceptive. Women who had abortion are 1.907 times more likely to use contraceptive.

Moreover, type of childhood place of residence appears as significant in the logistic model of contraception. Spending childhood in urban area increases, 1.351 times, the probability to use contraceptive.

Another significant predictor of contraceptive use is *desire of more children*. When it is compared with women who wish to give birth within two years, both groups of women; women want to limit and women want to space childbearing are respectively 2.040 times and 2.710 times more likely to use contraceptive.

Out of three covariates related to attitude toward contraception and abortion only one covariate, *approve contraception*, comes out as significant. Likelihood of contraceptive use is 3.808 times higher among women who approve contraception than women who do not approve.

Furthermore, *ethno-cultural characteristics* are significant on contraception for Kyrgyz and Russian women. Statistics shows that Russian women are 2.587 times more likely to use contraceptive than Kyrgyz women.

In the logistic regression model of contraception based on TDHS-2003, 43 percent of all cases (3298 out of 7686) are included in the analysis. Similar to the logistic model of abortion, the number of missing cases is again high, since the model is based on sub-sample. The number of cases included in the analysis is still high enough. Moreover, logistic model expresses the high degree of accuracy; 77 percent of the predicted value corrects the observed value (Table VII.2.2). Finally, Nagalkerke R square shows that logistic model can estimate 24 percent of the variation in contraceptive use in Turkey.

Number of living children appears as the most significant covariate in the logistic model of contraceptive use in Turkey. Odds ratios show that women with two children are 5.325 times and women with more than two living children are 6.477 times more likely to use contraception than women with less than two children.

Another significant predictor of contraceptive use is *age of women*. One year increase in the age causes 0.927 times decrease in the probability of use. On the other hand, when *age at first marriage* is considered, there exists a controversy disparity in terms of the probability to use contraceptive method. Likelihood of using contraception 1.033 times increases by single year increase in age at first marriage.

Besides *number of living children, age,* and *age at first marriage, education* is also significant on contraception. One year change in the years of schooling resulted in 1.041 times increase in the probability of using contraception.

Moreover variation in the *type of place of residence* is also significant. Women who live in urban area are 1,899 times more likely to use contraceptive methods than women who live in rural area.

Additionally, *working status* and *wealth status* are also associated with contraceptive use. According to results of logistic regression model women who are currently working or worked in the last year have 1.376 times higher probability to use contraception than women who never worked. *Wealth index* is significant with its all categories. It can be said from the regression results that almost a stable disparity exists between poorest group and all other four groups. Odds ratios of all categories of the index are around 1.5.

Likewise with Kazakhstan and Kyrgyzstan, *desire for more children* is strongly associated with contraceptive use in Turkey. Women who like to space or limit childbearing are respectively 2.645 or 3.629 times more likely to use contraceptive methods. Furthermore, *approve contraception* is also significant in the probability of the event. Likelihood of using contraception is 1.331 times higher among women who approve contraception than that of among women who do not approve.

When *ethno-cultural characteristics* are considered, there is evidence to suggest that Turks have the highest probability to use contraception. Kurds have nearly 67 percent while Turkish speaking Kurds have 32 percent lower probability to use contraception comparing Turks. In other words Turkish speaking Kurds present probability to use contraception in between Turks and Kurds.

Based on UHES-2002, 3079 cases out of 3666 total cases are included in the logistic regression analysis. In other words, 16 percent of all cases cannot be examined in the model. The missing cases are again, just like in logistic model of abortion, related to missing ethno-cultural characteristics. In spite of the reduction, the examined cases are high enough for the analysis. Moreover, accuracy degree of the model is good enough; 76 percent of the predicted value corrects the observed value (Table VII.2.2). Nagalkerke R square, the model fit measure, shows that logistic model can estimate 24 percent of the variation in contraceptive use in Uzbekistan.

The strongest association is seen in terms of variation in the *number of living children* in Uzbekistan. Results of the regression analysis obviously confirm that increase in the *number of living children* resulted in an increase in the probability to use *contraceptive methods*. When the categories of the covariate is evaluated it is seen that women who have two children are 8.533 times and women with more than two children are 15.761 times more likely to use contraception comparing women with less than two children.

Another significant predictor is *age* and there is an oppositional relation between *age* and *contraceptive use*. Result of analysis shows that one year increase in age 0.940 times decreases the likelihood of using contraceptive methods.

Other than *number of living children* and *age, education* also comes out as a significant covariate of contraceptive use. Probability to use contraceptive method 1.049 times increases with one year increase in the years of schooling.

Another significant disparity exists in terms of *women's life style;* between low and high status groups. Women who belong to high status group are 1.330 times more likely to use contraceptive than reference category.

Finally, a predictor related to marriage formation, *household composition at the time of marriage*, is significant on contraception. Women who started their marital life in an extended household are 30 percent less likely to use contraception than women whose marriage is started in a couple-alone household.

Table VII.4.1 Odds ratios of contraceptive use for married women, KDHS-1999, KRDHS-1997, TDHS-2003, and UHES-2002

Covariate	Kazakhstan	Kyrgyzstan	Turkey	Uzbekistan
Age (in single years)	0.954**	0.943**	0.927**	0.940**
Education (years of schooling)	1.016	1.045	1.041*	1.049**
Childhood place of residence				
Rural	1.000	1.000	1.000	1.000
Urban	0.899	1.351*	1.006	0.882
Residence				
Rural	1.000	1.000	1.000	1.000
Urban	1.029	1.143	1.899**	0.904
Number of living children				
Less than 2	1.000	1.000	1.000	1.000
2	2.279**	3.514**	5.325**	8.533**
More than 2	2.856**	7.755**	6.477**	15.761**
Ever had abortion				
No	1.000	1.000	1.000	1.000
Yes	1.440**	1.907**	1.155	1.022
Working status				
Never worked	1.000	na	1.000	1.000
Currently working or worked in the last year	1.115*		1.376**	0.975
Wealth index**	1.080	1.069		
Poorest			1.000	1.000
Poor			1.697**	1.041
Middle			1.533**	0.957
Rich			1.599**	0.993
Richest			1.436*	1.181
Social security	na	na	0.682	Na
Health insurance	na	na	1.098	Na
House ownership	na	na	1.005	0.985
Not owned				
Owned				
Women's life style		na		1.000
Low	1.000		1.000	1.218
Middle	0.881		0.940	1.330*
High	0.665*		1.138	
Age at first marriage (in single years)	1.074*	1.030	1.033*	1.006
Type of marriage	na	na	0.993	1.089
Household composition at the time of marriage	na	na	0.894	0.712**
Consanguinity	na	na	1.186	1.057
Bride money	na	na	1.185	Na
Desire for more children				Na
Yes, now	1.000	1.000	1.000	Na
Yes, later	3.258**	2.710**	2.645**	Na
No more	2.113**	2.040**	3.629**	Na
Approve of contraception	2.467**	3.808**	1.331*	Na
Approve of abortion	0.759**	ns	0.972	Na
Consider abortion in case of unwanted pregnancy	1.912**	ns	1.138	Na
Ethno-cultural characteristic				
Kazakhs / Kyrgyz / Turks / Uzbeks	1.000	1.000	1.000	1.000
Russians / Russians / Kurds / Russians	1.391*	2.587**	0.322**	1.572
Russian speaking Kazakhs / Russian speaking Kyrgyz / Turkish speaking Kurds / Russian speaking Uzbeks	1.128	1.349	0.673*	1.155
Constant	-2.217	-2.907	-0.812	0.306
Number of women	2639	2351	3298	3079

na=not available
*significance<0.05 **significance<0.01
**continuous factor score for the cases of Kazakhstan and Kyrgyzstan; categorical for the cases of Turkey and Uzbekistan.

When odds ratios of the logistic regression model of abortion and contraception are evaluated it is seen that *number of living children* is the only covariate which is significant for all countries in the both model. Regression results show that increase in the number of living children brings about a necessary increase in the probability of abortion practice and contraceptive use. When the relation between abortion practice and contraceptive use is considered, as the core concepts of this thesis, there is evidence to argue that probability of both events increase or decrease together. In other words women who *ever used contraception* are more likely to have abortion and women who *ever had abortion* are more likely to use contraception. On the other hand a controversial association is observed on abortion and contraception in terms of *desire for more children*. Among women who want to give birth within two years, probability to use contraception is higher while probability to experience abortion is lower compared to women who would like to limit or space childbearing. Results also show that *approve of contraception* appears as significant on contraceptive use whereas *consider abortion in case of unwanted pregnancy* is significant on abortion. Finally, ethno-cultural characteristics are influential in the variation except for the regression model of contraception in Uzbekistan. Association of Russian and Turkish ethnicity with the use of both abortion and contraception is confirmed in Table VII.3.1 and Table VII.4.1.

CHAPTER VIII CAUSAL MODEL OF CONTRACEPTION AND ABORTION

This chapter aims to generate a model that will help to explain causal relation between abortion and contraception in the general picture of fertility regulation with a specific emphasis on ethno-cultural background. The unit of analysis of the model is event and event refers to pregnancy in this thesis. 4574 events (cases) are analyzed for general model of Turkey. The initial model involves five observed variables “education of woman”, “number of children surviving at the time of pregnancy”, “pregnancy intention”, “contraception one month before pregnancy” and “result of pregnancy (birth/abortion)”. The last three variables reflect desire and practice of child bearing while the first two variables are basic background variables of fertility regulation. Variables are selected concerning their significance in the logistic model, their causal relation between each other, and their time dependence to the events of birth, abortion, and contraception. In the model generation process, first of all tentative initial model is specified. In order to understand independent relations between two or three variables in the model, they are tested using basic and/or multiple regressions. After controlling whether the initial model does fit the data, the model is modified and re-specified by using same data. The model which has a strong theoretical basis and the statistically best fit, is considered as the final model. In the second phase of the model generation ethno-cultural background is introduced into the model in two forms. First, it is used as moderator of the model and then model is re-specified with ethno-cultural background in the form of Multiple Indicator Multiple Cause (MIMIC) model. In MIMIC models it is possible to use one or more categorical variable as exogenous moderator variable. In the proposed MIMIC model, there are three categories; (1): Turks, (2) Turkish speaking Kurds, and (3) Kurds. This analysis shows the direct and indirect effects of ethno-cultural groups in the model of fertility regulation. Then, multiple group analysis is performed by ethno-cultural background. Therefore the final model is tested for different ethno-cultural groups. This analysis allows testing how far the same model is valid for different ethno-cultural groups.

Moreover, multiple group analysis obtains statistics to select the type of the best fitting model for different sub-groups of the studied population.

The tentative initial model of contraceptive use aims to explain causal relation behind “pregnancy intention” “contraception”, and “result of pregnancy”. Analysis covers the events in the last 60 months previous the survey. Two types of events; live birth and abortion are analyzed as result of pregnancy in this thesis. Therefore variable “result of pregnancy” has two dichotomous categories; *birth* and *abortion*. Pregnancy intention is asked for each live birth which was performed in the last 72 months previous the survey and for pregnancies at the time of the survey. Then desire of pregnancy is available for all live births in the period of analysis. Variable “pregnancy intention” has three categories as *want then, want to limit*, and want *to space*. Pregnancy intention in the cases of abortion is assumed as *want to limit or space*. For that reason categories of “pregnancy intention” in the cases of live births are also decreased to two categories as *want then* (1)*,* and *want to limit or space* (0). Variable “contraception” is used in a dichotomous form as *used any contraception* (1) or *did not use any contraception* (0) one month previous the pregnancy.

Before starting model generating for abortion and contraception, basic concepts which are used in the causal model are introduced in this chapter. Models primarily are generated by using TDHS-2003 in this thesis.

VIII.1 Basic concepts

Latent variable is the variable which cannot be measured or observed but indirectly observed or measured by a set of observed variables (Lomax and Schumacker, 2004).

Observed variable is the one which is directly available in the data set (Lomax and Schumacker, 2004).

Exogenous variables are not predicted by any other variable but they are predictor of the other variables.

Endogenous variable are predicted by other variables and they can also be predictor of the other variables.

Measurement model is a set of observed variables which predicts a latent variable.

Structural model refers to the overall model which includes observed and latent variables and their relations.

Model specification is determining the variables and their relationship in the model, based on the theoretical framework of the study (Lomax and Schumacker, 2004). This model should be applied to the data and confirmed.

Model identification is a crucial part of structural equation modelling (SEM). There are three types of parameters in models, as free, fVIIIed, and constrained parameters. Free parameters are unknown parameters which should be estimated in the model. FVIIIed parameters are not freely estimated but fVIIIed to either 0 or 1. Constrained parameters are also unknown but they are equal to other parameter or parameters. There are three levels of model identification depending on the information for estimating the parameter. Models which have at least one parameter that may not be estimated are *under-identified* (or not identified), models which have just enough information for estimating parameters are *just-identified,* while models which have more than enough information for estimating parameters are *over-identified*. In other words, underindentified models have either zero or negative degrees of freedom, just-indentified models have 1 degrees of freedom, while degrees of freedom for overidentified models are greater than one (Lomax and Schumacker, 2004). Just-identified models are not testable, since they have just enough information

for estimating parameters. Therefore probability level cannot be calculated for just-identified models.

Model estimation refers to estimating parameters in SEM. The estimation process uses a fitting function in order to minimize the difference between the implied covariance matrVIII and sample covariance matrVIII. Therefore χ^2=0 indicates the perfect fit to the data. Out of the available fitting functions, unweighted or ordinary least squares (ULS or OLS), generalized least squared (GLS), and maximum likelihood (ML), the last one is used in the analysis of this thesis by using package program *Analysis of Moment Structures (AMOS)*.

Model testing indicates to what extent the specified model fits the data base on the parameters estimated. The model fit has two levels, fit of the entire model and fit of the individual parameters. The former one, the global test, has several fit measures which were detailed in the methodology chapter. They generally aim to compare the implied covariance matrVIII and sample covariance matrVIII. The latter one, fit of the individual parameters, has three important features. The first, free parameters should be statistically different than zero. The second, the sign of the estimated parameter should be consistent with the theoretical frame of the model. The estimated parameter should be in the expected range. In other words, variance should not be negative, correlations should not exceed 1, and free parameters have the expected sign and are statistically different than zero.

Model modification refers to the change in the initial model in accordance to modification indices and theoretical frame. While the model does not fit the data well AMOS recommends some modification such as dropping out of a variable, introducing some correlation and/or causal relations. These modifications resulted in a better statistical fit regardless of any theoretical consideration. Therefore any single modification should be confirmed by the theoretical frame of the model before it is applied. Considering theoretical basis, modification are used to create the final model.

In the causal model *one-headed arrow* represents a causal relationship between two variables while a *two-headed arrow* represents a simple correlation between them.

Another differentiation is between representation of latent and observed variables. *Latent variables* are symbolized with *circles* while *observed variables* are symbolized with *rectangular* in the SEM (Loehlin, 2004).

Error term refers to unexplained variance of observed variable which cannot be explained by latent or observed variable. Determining the error variance is one of the major advantages of SEM since factor loadings are excluded from error variance. Error terms are symbolized with *circles* and labelled “e” in this study.

Standardized regression weights are used to compare relations within one single model, while *unstandardized regression weights* are used to compare multiple models belong to multiple groups.

VIII.2 Model Generation, Turkey

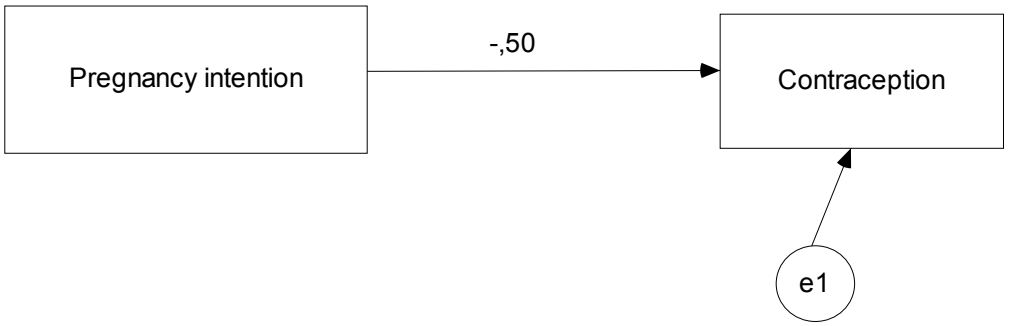
In this section, model generation process for Turkey is presented starting with basic regression, continuing with structural models and ending with final models for multiple groups of ethno-cultural background.

VIII.2.1 Regression between desire and practice, TDHS-2003

The final model of contraceptive use and abortion practice aims to explain causal relation behind “pregnancy intention”, “contraception”, and “result of pregnancy (birth or abortion)”. Before introducing the tentative model, the basic regression between desire and practice is tested. Regressions suggest that “pregnancy intention” explains “use of contraceptive” and, “result of pregnancy (birth or abortion)”. In other words

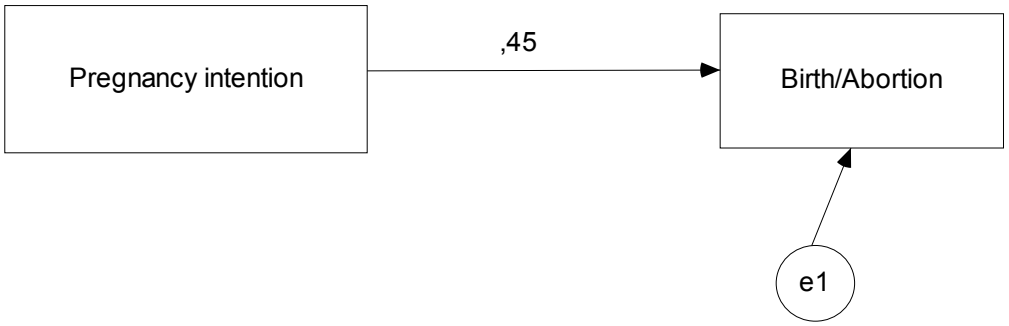
“pregnancy intention” is the predictor of “use of contraceptive” and “result of pregnancy (birth or abortion)”.

Figure VIII.2.1.1 Basic regression between desire for more children and contraceptive use



Basic regression between desire and contraception
Standardized estimates
chi-square=,000 df=0 p-value=\p
gfi=1,000 agfi=\agfi rmsea=\rmsea pclose=\pclose

Figure VIII.2.1.2 Basic regression between desire for more children and result of pregnancy



Basic regression between desire and practice (pregnancy result)
Standardized estimates
chi-square=,000 df=0 p-value=\p
gfi=1,000 agfi=\agfi rmsea=\rmsea pclose=\pclose

Regression model in Figure VIII.2.1.1 shows that there is an opposite relation between pregnancy intention and contraceptive use one month before pregnancy with 0.50 standardized factor loading. On the other hand, Figure VIII.2.1.2 indicates a parallel relation between pregnancy intention and result of pregnancy (birth/abortion) with 0.45 standardized factor loading.

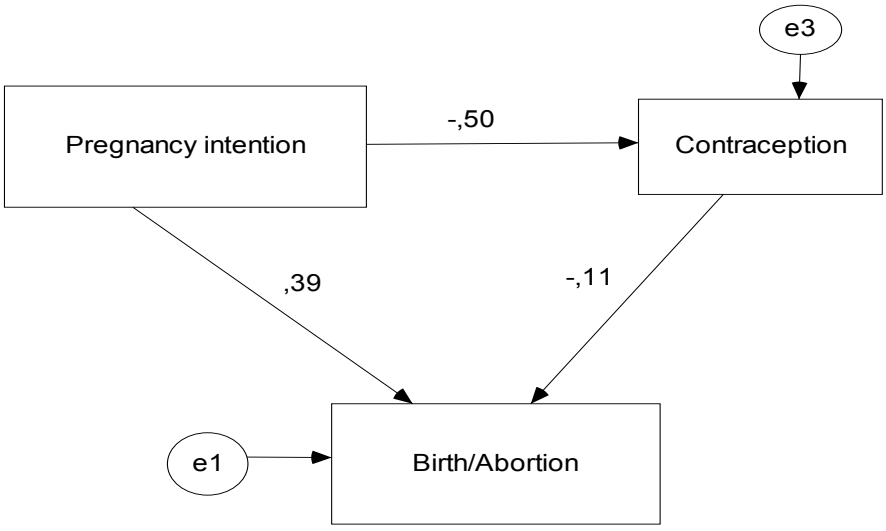
For both models, there are 3 distinct sample moments and 3 distinct parameters to be estimated. Therefore, the models have zero degrees of freedom. Such a model is called just-identified. Consequently, no probability level can be assigned to the chi-square statistic. These models are untestable.

In the multiple regression model in Figure VIII.2.1.3 relation between pregnancy intention, contraception and result of pregnancy are introduced. This model is driven from the idea that each woman has her own fertility preference and has two basic means of fertility control to achieve her preference. In this model, Figure VIII.2.1.3, pregnancy intention indicates the fertility preference, whereas using contraception and practicing abortion are both means of control.

Regression weights show that there is an opposite relation between pregnancy intention and contraception, and contraception and result of pregnancy with 0.50 and 0.11 standardized factor loadings respectively. In other words, the standardized indirect (mediated) effect of pregnancy intention on result of pregnancy is 0.057. This is in addition to direct (unmediated) effect that “pregnancy intention” has on result of pregnancy. The standardized direct (unmediated) effect of pregnancy intention on result of pregnancy is 0.395. Consequently, the standardized total (direct and indirect) effect of pregnancy intention on result of pregnancy is 0.452 (Table VIII.2.1.1). On the other hand, the standardized direct (unmediated) effect of pregnancy intention on contraception is -0.497. There is no additional indirect (mediated) effect that desire has on contraception according to the model (Table VIII.2.1.1).

There are 6 distinct sample moments and 6 distinct parameters to be estimated. Therefore, the model has zero degrees of freedom. Such a model is called just-identified. Consequently, no probability level can be assigned to the chi-square statistic. The model is untestable. Modification to solve the problems of low factor loadings and identification is not proceeding in this stage of the analyses.

Figure VIII.2.1.3 Multiple regression between desire for more children and contraceptive use



Multiple regression between desire, contraception, and pregnancy result
Standardized estimates
chi-square=,000 df=0 p-value=\p
gfi=1,000 agfi=\agfi rmsea=\rmsea pclose=\pclose

Table VIII.2.1.1 Standardized total, indirect, and direct effects; standard deviations

	Total effect		Direct effect		Indirect effect	
	Pregnancy intention	Contraception	Pregnancy intention	Contraception	Pregnancy intention	Contraception
Contraception	-.497	.000	-.497	.000	.000	.000
Birth/Abortion	.452	-.114	.395	-.114	.057	.000

VIII.2.2 Structural equation model of contraception and abortion

Structural model of contraception and abortion propose relation between above mentioned multiple regression model and other emphasized characteristics of woman. The initial model is presented in Figure VIII.2.2.1. This model aims to explain causal relation behind the multiple regression models between “pregnancy intention”, “contraception” and “result of pregnancy” (Figure VIII.2.1.3). Level of significance for regression weight, estimate of standardized regression weights, and model fit measures are evaluated and necessary modifications are done regarding modification indices and their theoretical meanings.

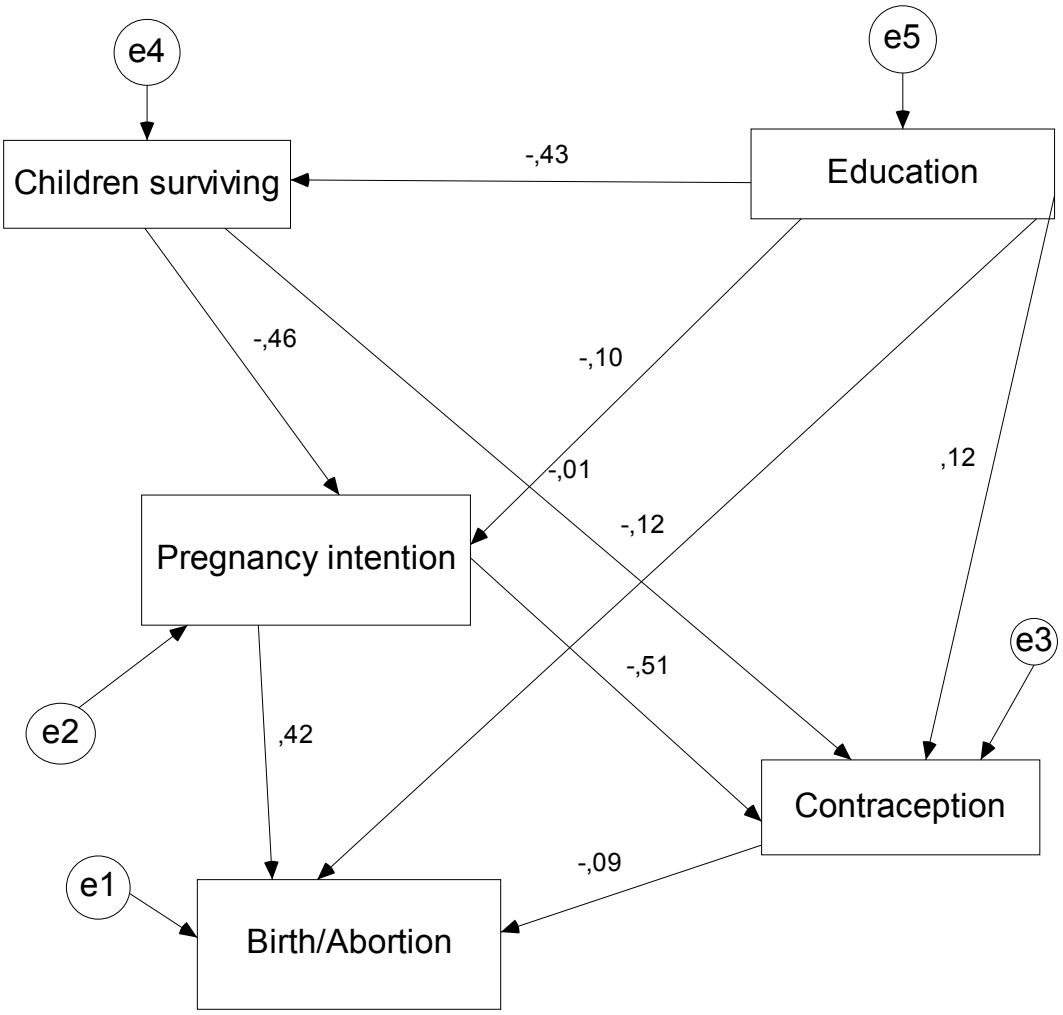
Level of significance for regression weight of “children surviving” and “contraception” shows that, the probability of getting a critical ratio as large as 0.581 in absolute value is 0.561. In other words, the regression weight for “children surviving” in the prediction of “contraception” is not significantly different from zero at the 0.05 level (two-tailed). Therefore relation between “children surviving” and “contraception” should be omitted in the first modification. Despite very good GFI, AGFI, and RMSEA values CMIN/DF value the discrepancy divided by degrees of freedom is 20.085 / 1 = 20.085. It is quite high than a good fit value. In other words the initial model does not fit the data well. Figure VIII.2.2.1 also shows that standardized regression weight between “children surviving” and “contraception” is too low.

Relation between “children surviving” and “contraception” is omitted in the first modification. This modification resulted in a remarkable decrease in CMIN/DF value; even it is still high for a good fit value (20.422 / 2= 10.211). After the first modification all regression weights are significantly different from zero at the 0.001 level (two-tailed).

Using the modification indices in the footnote Figure 2.2.2, error variance of “children surviving” and “pregnancy intention” (e1 and e4) are correlated. After the second modification CMIN/DF value reaches highly satisfying level, the discrepancy divided by degrees of freedom is 0.337 / 1

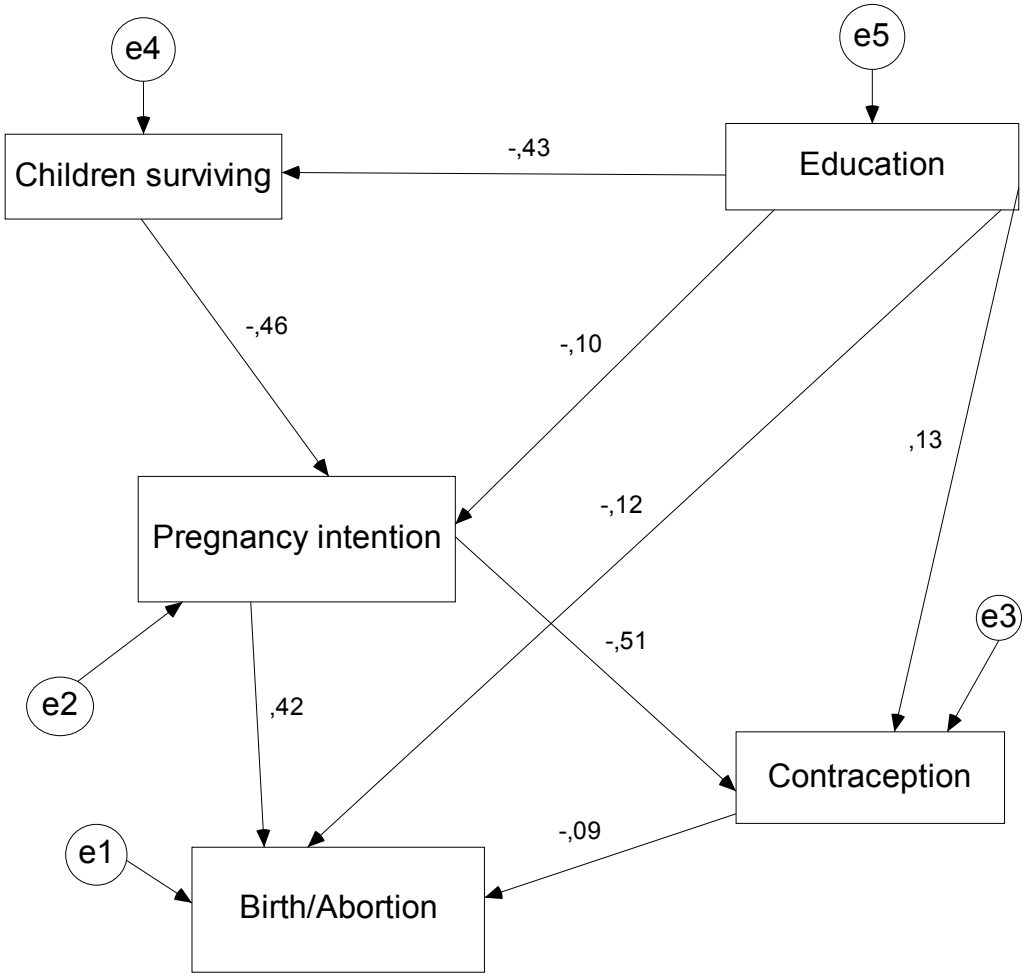
= 0.337 (Figure VIII.2.2.3). Moreover GFI, AGFI, and RMSEA fit measure values are quite appropriate and it means that the model fit the data well.

Figure VIII.2.2.1 Initial structural model of contraception and abortion



Initial structural model
Standardized estimates
chi-square=20,085 df=1 p-value=,000
gfi=,998 agfi=,974 rmsea=,065 pclose=,136

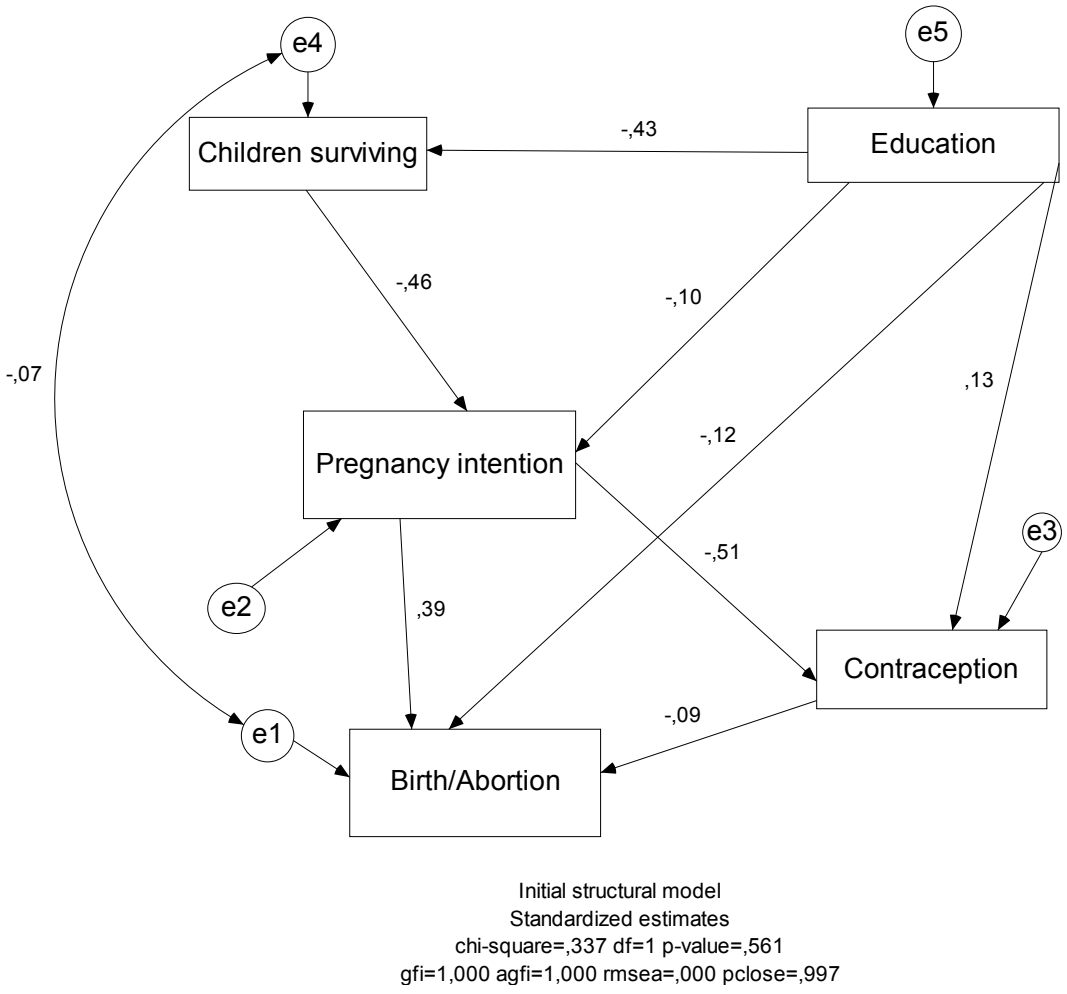
Figure VIII.2.2.2 Structural model, first modification



Initial structural model
Standardized estimates
chi-square=20,422 df=2 p-value=,000
gfi=,998 agfi=,987 rmsea=,045 pclose=,645

*Modification indices, covariances: between e1 and e4, MI: 16.514, par change: -0.030

Figure VIII.2.2.3 Structural model, final



Final model in Figure VIII.2.2.3 shows the causal relation between basic variables of fertility regulation (“pregnancy intention”, “contraception”, and “birth/abortion”) and selected background characteristics of woman (“number of children surviving” and “education in single year”).

“Children surviving” and “pregnancy intention” appeared as significant variables both for “contraceptive use” and “abortion practice” according to logistic regression analysis. Structural model shows a further step that “pregnancy intention” is the mediator for the causal relation between “children surviving” and “contraceptive use”, and “children surviving” and “pregnancy result” (birth/abortion) (Table VIII.2.2.2). Moreover direct effect of “children surviving” and “contraception” is also tested in the initial model

and it is omitted due to its insignificance. The standardized total effect of “children surviving” on “contraception” is 0.236. That is, due to indirect (mediated) effects of “children surviving” on “contraception”. When “children surviving” *goes up* by 1 standard deviation, “contraception” *goes up* by 0.236 standard deviations. Pregnancy intention has also other mediating effect children surviving on pregnancy result (birth/abortion). The standardized total effect of children surviving on abortion practice is -0.203. That is, due to indirect (mediated) effects of children surviving on abortion practice, when children surviving *goes up* by 1 standard deviation, abortion practice *goes down* by 0.203 standard deviations.

As it is shown in Figure VIII.2.2.3 and Table VIII.2.2.1, the standardized direct (unmediated) effect of children surviving on pregnancy intention is -0.463. There is no additional indirect (mediated) effect that children surviving may have on pregnancy intention in the proposed model. When “children surviving” goes up by 1 standard deviation, “pregnancy intention” goes down by 0,463 standard deviations.

The effect of education on contraception and birth/abortion is more complicated since both direct (unmediated) and indirect (mediated) effects exist. Education primarily effects number of children surviving. The standardized direct (unmediated) effect of education on children surviving is -0.432. When “education” *goes up* by 1 standard deviation, “children surviving” *goes down* by 0.432 standard deviations. There is no additional indirect (mediated) effect that “education” has on “children surviving” in this model. Education has both direct and indirect effect on pregnancy intention. Education has opposite direct effect on pregnancy intention. The standardized direct (unmediated) effect of education on pregnancy intention is -0.103. When its indirect (mediated) effect is also controlled it is seen that the standardized total (direct and indirect) effect of education on pregnancy intention is 0.097. That is, due to both direct (unmediated), -0.103, and indirect (mediated), 0.200, effects of education on pregnancy intention.

Final model also involves direct and indirect effects of education on contraception and birth/abortion. Pregnancy intention mediates the relation between education and contraception and education and birth/abortion. The standardized total (direct and indirect) effect of education on contraception is 0.076. That is, due to both direct (unmediated), 0.125, and indirect (mediated), -0.049, effects of education on contraception. In other words when education *goes up* by 1 standard deviation, contraception *goes up* by 0.076 standard deviations. The standardized total (direct and indirect) effect of education on pregnancy result (birth/abortion) is -0.089. That is, due to both direct (unmediated), -0.120, and indirect (mediated), 0.031, effects of education on birth/abortion. This means when education *goes up* by 1 standard deviation, birth/abortion *goes down* by 0,089 standard deviations.

Table VIII.2.2.1 Standardized total, indirect, and direct effects

	Total effect				Direct effect				Indirect effect			
	Education	Children surviving	Pregnancy intention	Contraception	Education	Children surviving	Pregnancy intention	Contraception	Education	Children surviving	Pregnancy intention	Contraception
Children surviving	-.432	.000	.000	.000	-.432	.000	.000	.000	.000	.000	.000	.000
Pregnancy intention	.097	-.463	.000	.000	-.103	-.463	.000	.000	.200	.000	.000	.000
Contraception	.076	.236	-.509	.000	.125	.000	-.509	.000	-.049	.236	.000	.000
Birth/Abortion	-.089	-.203	.438	-.095	-.120	.000	.389	-.095	.031	-.203	.048	.000

VIII.2.2.1 Structural equation model of contraception and abortion with ethno-cultural groups as moderator

After having specified the best fitting final model, ethno-cultural groups are introduced in a new model (Figure VIII.2.2.5). This type of model called as Multiple Indicator Multiple Cause (MIMIC) in the SEM literature (Bollen, 1989). This type of model allows using one or more categorical variable; therefore ethno-cultural groups are employed as moderator. Variable has three categories; Turks (1), Turkish speaking Kurds (2), and Kurds (3). The proposed model has very good fit in terms of all values of CMIN/DF, GFI, AGFI, and RMSEA. Considering level of significance for regression weight, all regressions are significantly different from zero at the 0,001 level (two-tailed).

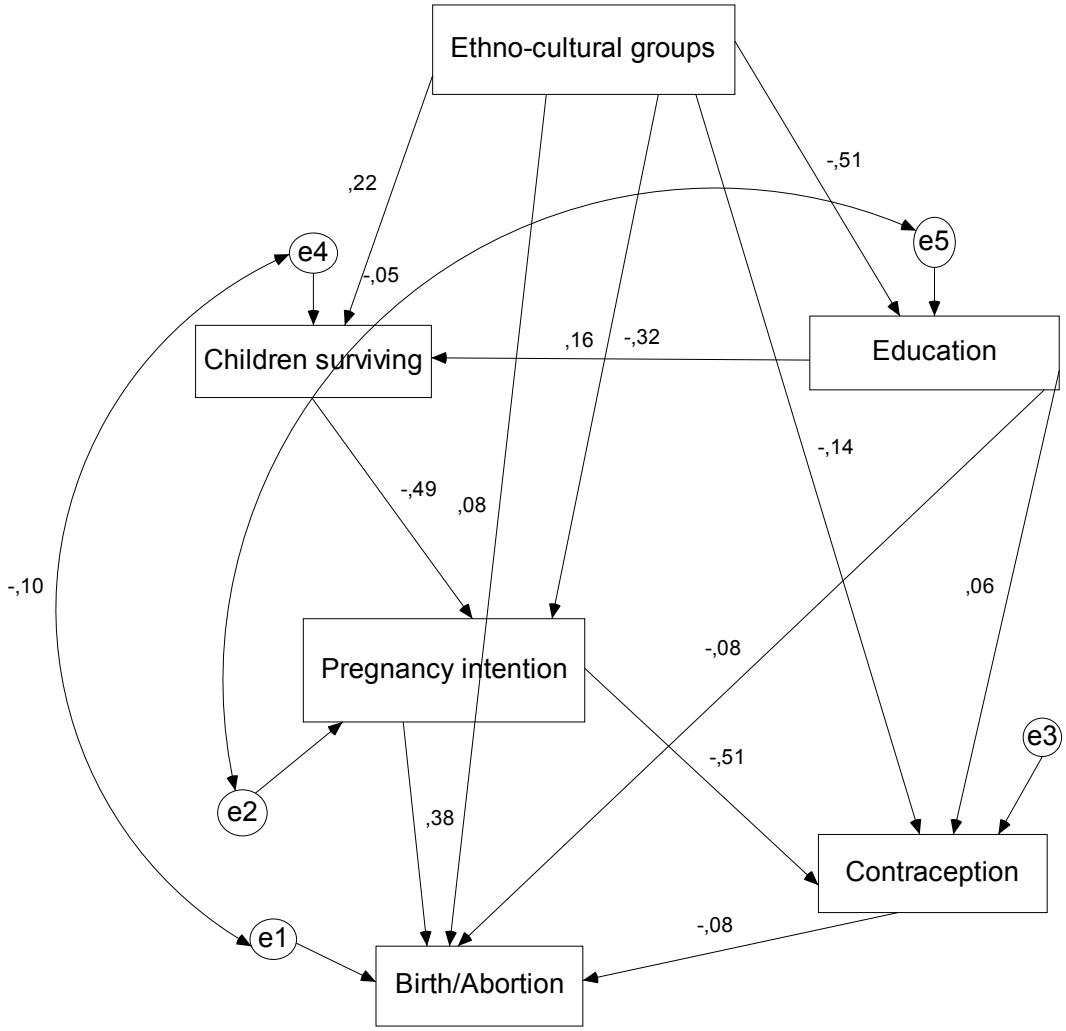
The model controls direct effect of ethno-cultural groups on all other variables in the model and also its indirect effect on pregnancy intention, contraception, and birth/abortion. Ethno-cultural belonging has high effect on education. The standardized total (only direct) effect of ethno-cultural groups on education is -0.507. In other words when “ethno-cultural groups” *goes up* from category 1 (Turks) to category 2 (Turkish speaking Kurds) or , from category 2 (Turkish speaking Kurds) to category 3 (Kurds); education *goes down* by 0.507 standard deviations. Ethno-cultural differences also affects number of children surviving both direct (unmediated) and indirect (mediated) through education. The standardized total (direct and indirect) effect of ethno-cultural groups on children surviving is 0.382. Variable “ethno-cultural groups” has positive effects both directly and indirectly on children surviving. It means that number of children surviving is increasing in terms of ethno-cultural groups respectively for Kurds, Turkish speaking Kurds, and Turks.

Another significant effect of ethno-cultural groups is on pregnancy intention. Despite the positive direct effect of ethno-cultural groups, 0.16; the standardized total (direct and indirect) effect of ethno-cultural groups on

pregnancy intention is -0.030. That is, due to the indirect (mediated) effect of ethno-cultural groups on pregnancy intention through “children surviving” and “education” and “children surviving”. It shows that when the effect of “children surviving” is controlled, “ethno-cultural groups” has positive effect on “pregnancy intention”. On the other hand, “pregnancy intention” is decreasing stemming from mediation effect of “children surviving” from Turks to Turkish speaking Kurds, and from Turkish speaking Kurds to Kurds.

The standardized total (direct and indirect) effect of ethno-cultural groups on contraception is -0.149. That is, due to both direct (unmediated), -0.135, and indirect (mediated), -0.013, effects of ethno-cultural groups on contraception. The change in the categories as from category 1 (Turks) to category 2 (Turkish speaking Kurds), and from category 2 (Turkish speaking Kurds) to category 3 (Kurds) has opposite effect on the probability to use contraception. When the causal relation between ethno-cultural groups and pregnancy results (birth/abortion) are considered, it is seen that the standardized total (direct and indirect) effect of ethno-cultural groups on birth/abortion is 0.117. Meaning that Kurds have lower tendency for relying on abortion than Turkish speaking Kurds, and Turkish speaking Kurds have lower tendency for rely on abortion than Turks. That is, due to both direct (unmediated), 0.075, and indirect (mediated), 0.042, effects of ethno-cultural groups on birth/abortion. Even ethno-cultural groups has significant effect on the variation of education, education has no powerful mediated effect on neither contraception nor birth/abortion. Key mediator in both relations is pregnancy intention according to the model. The high effect of education on children surviving resulted in small share in the indirect effect of ethno-cultural group on contraception, and birth/abortion through education, children surviving, and pregnancy intention. However these effects are very small; 0.041, and -0.030 respectively.

Figure VIII.2.2.5 Structural model with ethno-cultural groups as moderator



Basic regression between desire and practice (pregnancy result)
Standardized estimates
chi-square=2,891 df=1 p-value=,089
gfi=1,000 agfi=,996 rmsea=,020 pclose=,954

VIII.2.2.2 Multiple group analysis of the structural model of contraceptive and abortion by ethno-cultural groups

In this part of the analysis the best fitting model of contraception will be tested for different ethno-cultural groups, Turks, Turkish speaking Kurds, and Kurds. The sample size of the groups are 3246, 368, 824 respectively. The aim of this comparison is to figure out constrains of the multiple group model of contraception and abortion and detect the difference in the structure and the level of relation for different ethno-cultural groups.

In order to decide the best fitting model for all three groups, model fits for different types of model are compared. As their CMIN/DF value seen in the Table VIII.2.2.2.1, the unconstrained model, with the discrepancy divided by degrees of freedom is 30.377 / 3 = 10.126, is the best fitting model for the three groups. Moreover, RMSEA value, 0.045, is also lowest for the unconstrained model. In the unconstrained model all parameters are freely estimated. In other words, model fits the data of each group in some how but all measurement weights, structural weights, structural covariance, structural residuals, and measurement residuals are different for Turks, Turkish speaking Kurds, and Kurds. It should be noted that even the unconstrained model does not fit well the data of multiple groups. Figure VIII.2.2.2.1, Figure VIII.2.2.2.2, and Figure VIII.2.2.2.3 respectively show the structural equation model and unstandardized estimates for Turks, Turkish speaking Kurds, and Kurds.

Table VIII.2.2.2.1 Measure fit of multiple group analysis of the structural model

Model	NPAR	CMIN	DF	P	CMIN/DF	RMSEA	LO 90	HI 90	PCLOSE
Unconstrained	42	30.377	3	.000	10.126	.045	.032	.061	.668
Structural weights	26	376.959	19	.000	19.840	.065	.060	.071	.000
Structural residuals	14	1752.686	31	.000	56.538	.112	.107	.116	.000
Saturated model	45	.000	0						
Independence model	15	4358.987	30	.000	145.300	.180	.176	.185	.000

In the first place, level of significance for regression weights of multiple group analysis is examined (Table VIII.2.2.2.2). All regression weights are significantly different from zero at the 0,001 level (two-tailed) for Turks with an exception of contraception in the prediction of birth/abortion (significantly different from zero at the 0,01 level). On the other hand in the case of Kurds, the regression weights for “education” in the prediction of “pregnancy intention”, “education” in the prediction of “contraception”, “education” in the prediction of “pregnancy result”, and “contraception” in the prediction of “pregnancy result” is significantly different from zero at the 0,05 level (two-tailed). Level of significance for regression weights is not satisfactory also for Turkish speaking Kurds. The regression weight for “education” in the prediction of “pregnancy intention” is significantly different from zero at the 0.05 level (two-tailed). Moreover, the regression weight for “education” in the prediction of “contraception”, “education” in the prediction of “pregnancy result”, and “contraception” in the prediction of “pregnancy result” are not significantly different from zero at the 0.05 level (two-tailed). In other words effects of “education” on “pregnancy intention” “contraception”, and “result of pregnancy”, and effect of “contraception” on “pregnancy result” are insignificant. These results show that the causal relations of the best fitting model for general Turkey are not valid for Turkish speaking Kurds and Kurds.

Then the significant relations of the all three models are examined. Opposite effect of “education” on “children surviving” exists for all three groups yet with different factor loadings. When “education” *goes up* by 1, “children surviving” *goes down* by 0.129 among Turks, 0.156 among Turkish speaking Kurds, and 0.327 among Kurds. In the structural model with ethno-cultural groups as moderator in Figure VIII.2.2.5 “education” appears as a significant variable which is affected by “ethno-cultural groups” and affects “children surviving”. It is remarkable that the same variable “education” has varying factor loadings according to ethno-cultural groups in multiple group analysis.

Other significant causal relation exists from “children surviving” to “pregnancy intention”. This effect is higher among Turks and Turkish speaking Kurds than Kurds. When “children surviving” goes up by 1, “pregnancy intention” goes down by 0.181, 0.161, and 0.087 respectively.

Difference in the unstandardized estimates between ethno-cultural groups is sharp in the effects of pregnancy intention on contraception and birth/abortion. The effect of pregnancy intention on contraception is very high among Turks and Turkish speaking Kurds with -0.545, and -0.589 respectively. On the other hand, the same statistics is only -0.285 among Kurds. A similar trend is observed for the effect of pregnancy intention on birth/abortion. When pregnancy intention *goes up* by 1, birth/abortion *goes up* by 0,292 among Turks, 0.304 among Turkish speaking Kurds, and 0.086 among Kurds.

Since the multiple group analysis shows that the general model of Turkey does not satisfactorily fits data of Turkish speaking Kurds and Kurds, and also several relations are not statistically significant for these groups, model is modified and re-specified for the both groups (Figure VIII.2.2.2.4, and Figure VIII.2.2.2.5). The first important difference of these models comparing the structural model of general Turkey is that “education” has no direct effect on neither “contraception” nor “birth/abortion”. The standardized total effect of “education” on “contraception” is -0.041 for Kurds and -0.019 for Turkish speaking Kurds. The standardized indirect (mediated) effect of “education” on “birth/abortion” is 0.029 for Kurds, and 0.008 for Turkish speaking Kurds. Those are due to the indirect (mediated) effects of “education” on “contraception” and “birth/abortion”.

When the effects of “children surviving” on “contraception” and “birth/abortion” are considered, again the indirect (mediated) effects are appeared as primarily significant. Among Kurdish population, only indirect

effects of “children surviving” on “contraception” and “birth/abortion” exist. The standardized indirect (mediated) effect of “children surviving” on “contraception” is 0.148 and on “birth/abortion” is -0.107. On the other hand among Turkish speaking Kurdish population, the standardized total (direct and indirect) effect of “children surviving” on “contraception” is 0.407. That is, due to both direct (unmediated), 0.143, and indirect (mediated), 0.264, effects of “children surviving” on “contraception”. “Children surviving” has only indirect (mediated) effect on “birth/abortion” with 0.227 factor loadings.

The highest effect on “contraception” and “birth/abortion” is of “pregnancy intention”. The standardized direct (unmediated) effect of “pregnancy intention” on “contraception” is -0.333. When “pregnancy intention” *goes up* by 1 standard deviation, contraception *goes down* by 0.333 standard deviations. The standardized direct (unmediated) effect of “pregnancy intention” on “birth/abortion” is 0.241. When “pregnancy intention” *goes up* by 1 standard deviation, “birth/abortion” *goes up* by 0,241 standard deviations. There is no addition to any indirect (mediated) effect that “pregnancy intention” have on “contraception” and “birth/abortion”.

When the unstandardized estimates of “pregnancy intention” on “contraception” and “birth/abortion” are compared for the both groups, it is seen that the total (direct) effect of “pregnancy intention” on “contraception” among Kurds is -0.281 while the same statistics is -0.521 among Turkish speaking Kurds. The total (direct and indirect) effect of “pregnancy intention on “birth/abortion” is 0.101 among Kurds, and 0.329 among Turkish speaking Kurds. These results show a stronger relation between pregnancy intention and contraceptive use and abortion practice in terms of variations in ethno-cultural background.

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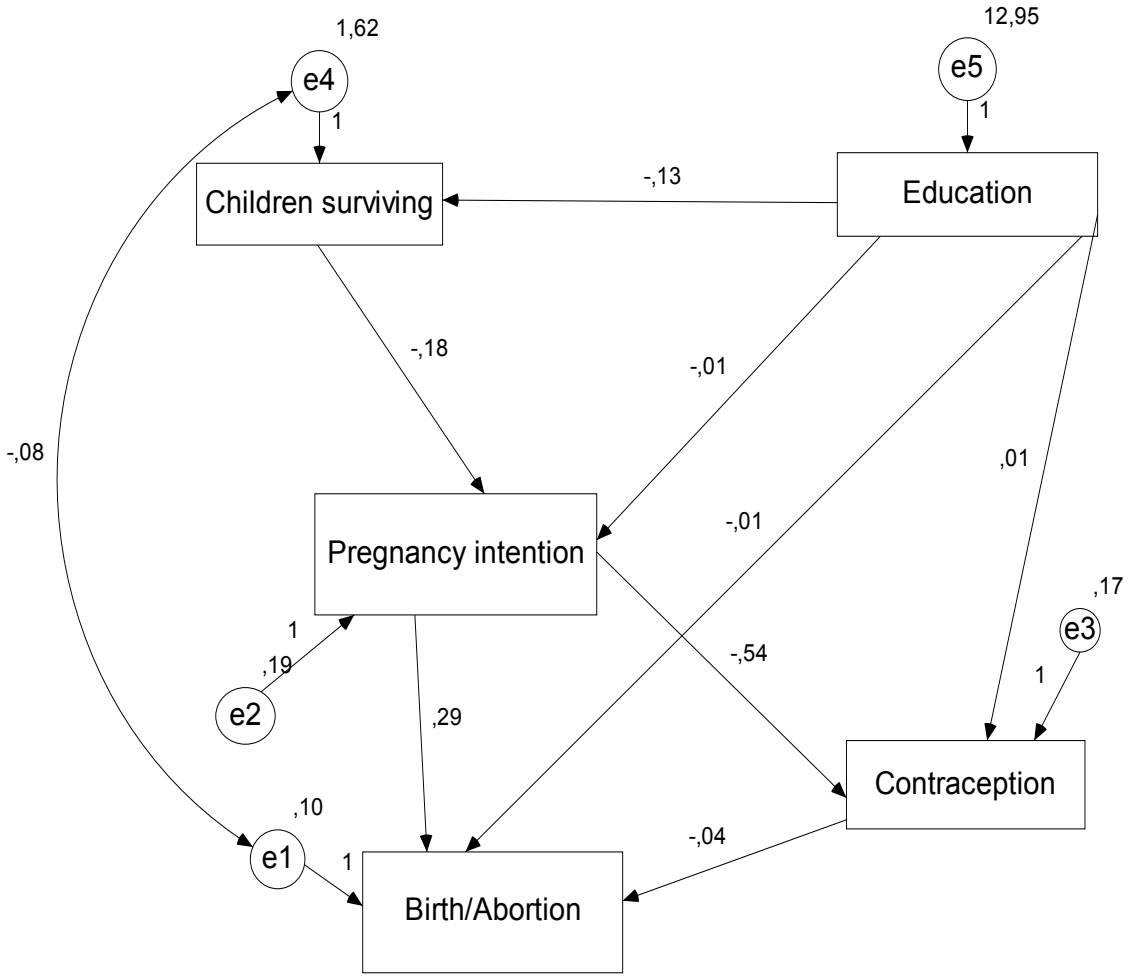
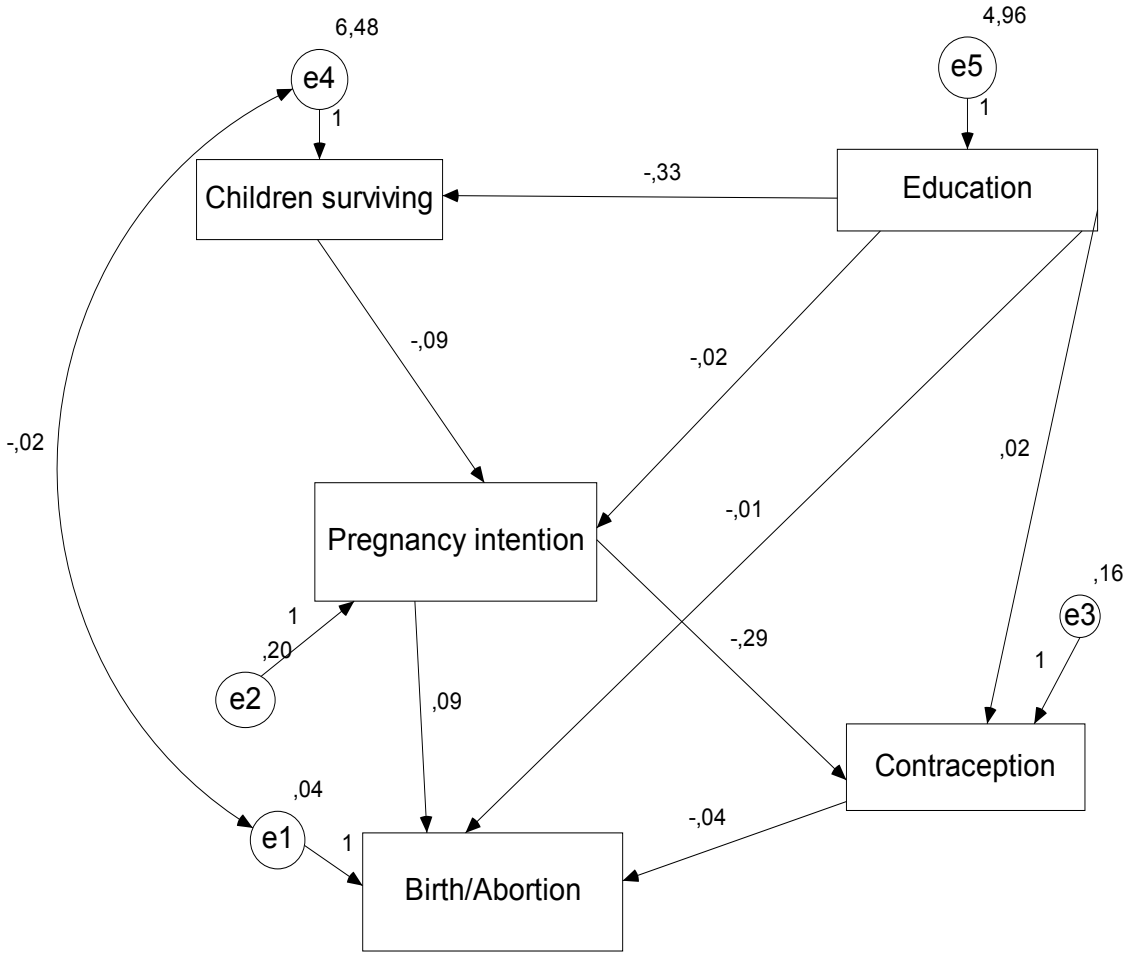
Figure VIII.2.2.2.1 Multiple group analysis, Turks



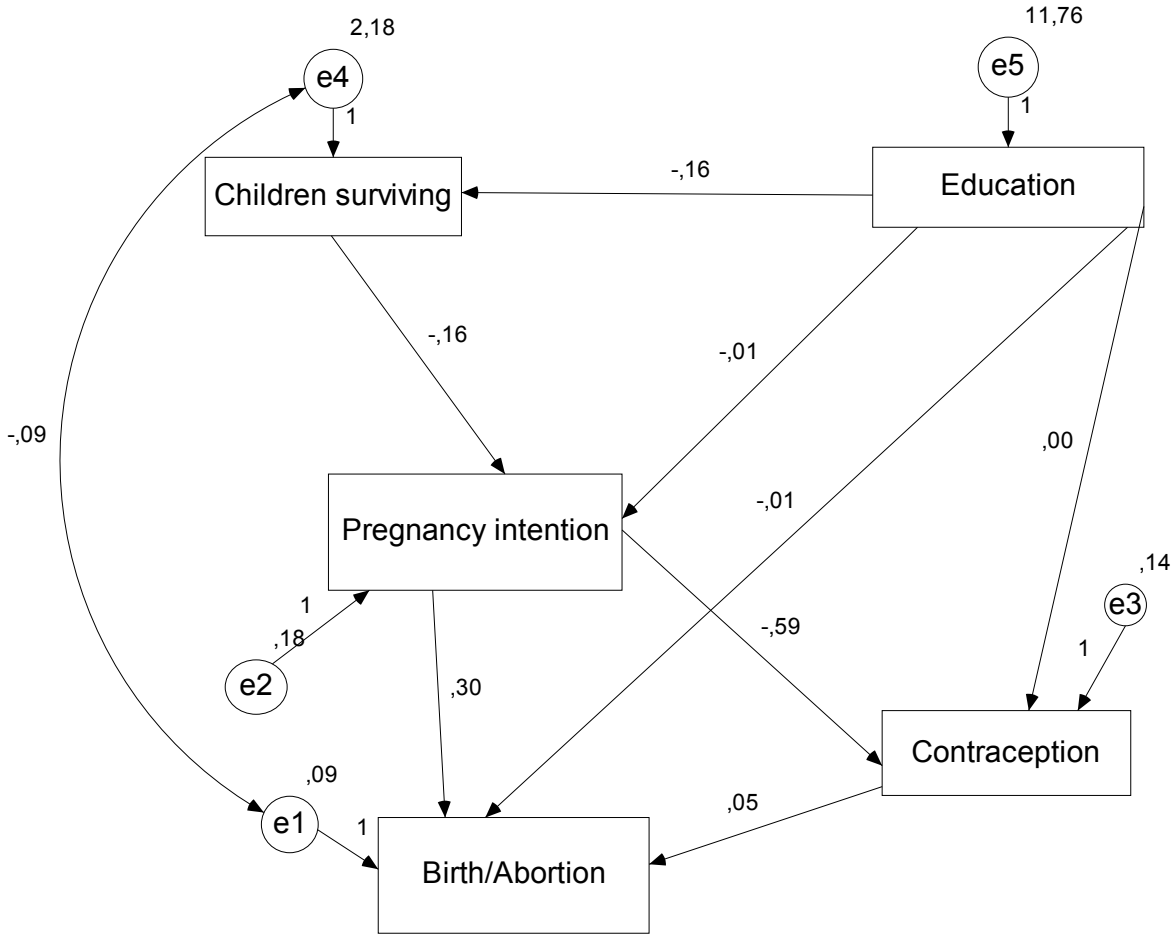
Structural model, Turks
Unstandardized estimates
chi-square=30,377 df=3 p-value=,000
gfi=,997 agfi=,959 rmsea=,045 pclose=,668

Figure VIII.2.2.2.2 Multiple group analysis, Kurds



Structural model, Kurds
Unstandardized estimates
chi-square=30,377 df=3 p-value=,000
gfi=,997 agfi=,959 rmsea=,045 pclose=,668

Figure VIII.2.2.2.3 Multiple group analysis, Turkish speaking Kurds

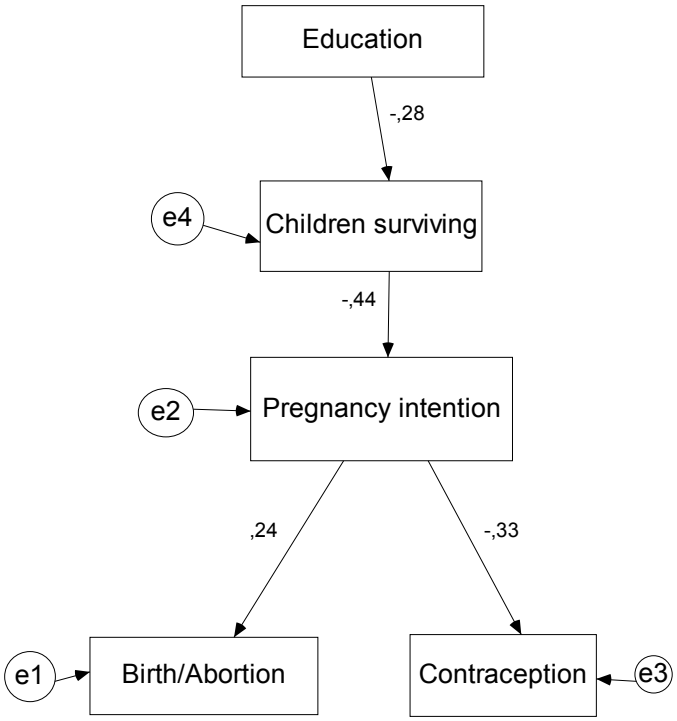


Structural model, Turkish speaking Kurds
Unstandardized estimates
chi-square=30,377 df=3 p-value=,000
gfi=,997 agfi=,959 rmsea=,045 pclose=,668

Table VIII.2.2.2.2 Unstandardized regression weights regarding multiple group analysis of the structural model

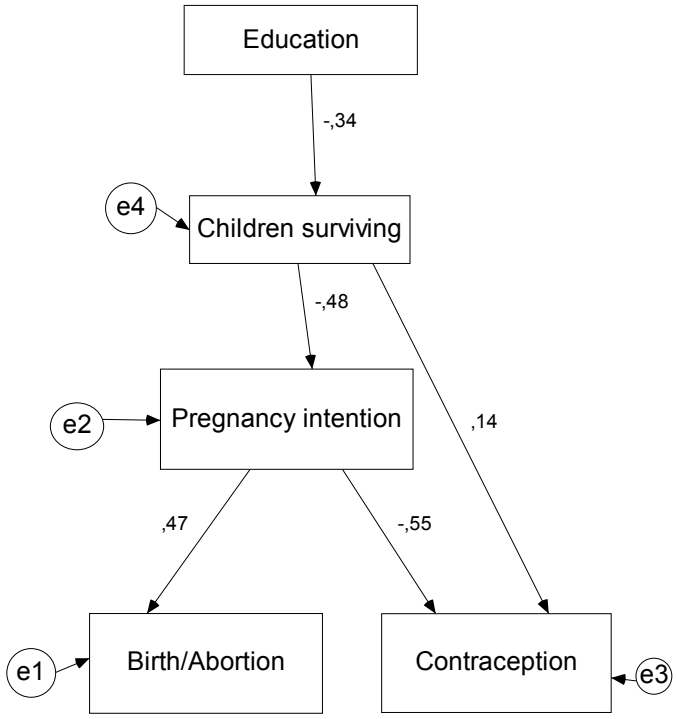
			Turks					Kurds					Turkish speaking Kurds				
			Estimate	S.E.	C.R.	P	Label	Estimate	S.E.	C.R.	P	Label	Estimate	S.E.	C.R.	P	Label
Children surviving	<---	Education	-.129	.006	-20.817	***	b6_1	-.327	.040	-8.211	***	b6_2	-.156	.022	-6.951	***	b6_3
Pregnancy intention	<---	Children surviving	-.181	.006	-30.425	***	b3_1	-.087	.006	-14.355	***	b3_2	-.162	.015	-10.684	***	b3_3
Pregnancy intention	<---	Education	-.009	.002	-4.171	***	b8_1	-.016	.007	-2.265	.024	b8_2	-.014	.007	-2.010	.044	b8_3
Contraception	<---	Pregnancy intention	-.545	.015	-36.788	***	b2_1	-.285	.028	-10.307	***	b2_2	-.589	.039	-14.972	***	b2_3
Contraception	<---	Education	.007	.002	3.316	***	b5_1	.015	.006	2.476	.013	b5_2	.003	.006	.477	.633	b5_3
Birth/Abortion	<---	Pregnancy intention	.292	.014	20.573	***	b1_1	.086	.017	5.198	***	b1_2	.304	.044	6.959	***	b1_3
Birth/Abortion	<---	Education	-.007	.002	-4.356	***	b4_1	-.006	.003	-1.999	.046	b4_2	-.009	.005	-1.935	.053	b4_3
Birth/Abortion	<---	Contraception	-.039	.013	-3.019	.003	b7_1	-.036	.018	-2.039	.041	b7_2	.053	.042	1.275	.202	b7_3

Figure VIII.2.2.2.4 Re-specified structural model, Kurds



Structural model, Kurds
Standardized estimates
chi-square=20,981 df=6 p-value=,002
gfi=,990 agfi=,974 rmsea=,055 pclose=,330

Figure VIII.2.2.2.5 Re-specified structural model, Turkish speaking Kurds



Structural model, Turkish speaking Kurds
Standardized estimates
chi-square=22,905 df=5 p-value=,000
gfi=,977 agfi=,932 rmsea=,099 pclose=,021

CHAPTER IX. CONCLUSION AND DISCUSSION

This dissertation aims a critical approach to the idea of replacement of abortion with contraception with a cross-cultural perspective. Cross-cultural perspective is handled into two ways in this study; the first one is to examine fertility regulation concerning abortion and contraception for *different ethno-cultural groups within same country* and the second one is to examine *ethno-cultural variation for selected different countries*.

In the first place, the focus of the analysis is to test two basic hypotheses; desire for reproduction is not the only determinant of practice of reproduction, and women from particular ethno-cultural background have higher control on their fertility both through abortion and contraception. Descriptive analysis and logistic regression analysis provide information to examine these assumptions based on Kazakhstan DHS 1999, Kyrgyzstan DHS 1997, Turkey DHS 2003, and Uzbekistan HES 2002. In this process, the significance of ethno-cultural characteristics in fertility behaviour is also underlined. Moreover the limitations of conventional demographic data while taking culture into account in explaining demographic behaviour is discussed. Proposed taxonomy of ethno-cultural groups is another important contribution of this thesis especially for demographers who want to take culture into account in their analysis. Considering the mother tongue, language used for communication, religion, and ethnicity three different groups are formed for studied countries. These groups are *(1) Kazaks, (2) Russian speaking Kazaks, (3) Russians* in Kazakhstan; *(1) Kyrgyz, (2) Russian speaking Kyrgyz, (3) Russians* in Kyrgyzstan; *(1) Turks, (2) Turkish speaking Kurds, (3) Kurds* in Turkey; and *(1) Uzbeks, (2) Russian speaking Uzbeks, (3) Russians* in Uzbekistan.

In the second place, it is aimed to develop an alternative model to re-place abortion practice and contraceptive use in overall picture of fertility regulation with a specific emphasis on ethno-cultural features. Proposed models are based on Turkey DHS 2003. Models could be developed for other countries by making necessary modifications in accordance with their

conceptualization of fertility regulation. The significant point of the causal models of abortion and contraception is that fertility regulation is considered as a holistic and dynamic mechanism which involves interrelated components including abortion and contraception. The place of abortion and contraception *in the model*, in other words *in the general picture of fertility regulation*, is related with the direction and the magnitude of their causal relation with the other components of the model. Ethno-cultural background is the moderator of the final model. This model is used to test the hypothesis that suggests ethno-cultural characteristics are influential on the relation between desire and practice of reproduction through mediators such as children surviving, and educational level of women.

When we assess the results of the descriptive analysis in detail, it is seen that despite the difference in the level of practice, abortion is quite common in all four countries understudy. Almost a quarter of women in Turkey, just few more than a quarter of women in Uzbekistan, one third of women in Kyrgyzstan, and half of women in Kazakhstan experienced abortion at least once throughout their life. Level of contraceptive use at the time of survey among married women is very close to each other; varying from 60 to 71 percent respectively for women in Kyrgyzstan, Kazakhstan, Uzbekistan, and Turkey. The percentage of women ever used any contraception is also at the highest level in Turkey with 90 percent. The perspective of replacement of abortion with contraception especially focuses on the non-users of contraception. They are considered as potential consumers of abortion practice. Therefore increase in contraceptive use results in a decrease in abortion practice. At the first look to the result of this analysis, Turkey draws attention with its lowest level of abortion practice versus highest level of contraceptive use. On the other hand it does not show that never users of contraceptives are the ever user of abortion.

Two further analyses are performed in order to find out whether consumers of abortion and contraception are the same group of women or not. In the first analysis percent distribution of ever-married women by use of abortion and/or contraception is calculated. According to the results, the

share of women who have used only abortion for fertility regulation is very low in all four studied countries; 0.3 percent of women in Turkey, 1.6 percent of women in Uzbekistan, 0.18 percent of women in Kyrgyzstan, and 2.6 percent of women in Kazakhstan never used any contraception but practiced abortion. Therefore it is clear that abortion is not a method of fertility regulation of non-users of contraception in the studied countries. Moreover, the results of the analyses confirm the association between abortion practice and modern contraceptive use. Percent distribution of ever-married women who had at least one abortion is controlled with type of use of contraception. Results show that around 90 percent of women who had at least one abortion also used a modern contraception. This result confirms literature in the way that modern method users have higher intention to practice abortion in case of unintended pregnancy. This association between abortion practice and modern contraceptive use is a result of greater motivation and ability to control fertility both through abortion and contraception that some women have. Contraceptive failure is not directly included into the analysis of this dissertation. On the other hand method mix, especially method type, is emphasized since failure rates differ according to the method type.

Descriptive analyses also concentrated on the ethno-cultural variations in abortion practice and contraceptive use in Kazakhstan, Kyrgyzstan, Turkey, and Uzbekistan. Ethno-cultural differentiation refers to cultural diversity which is considered together with cultural belonging dominated by ethnicity. In this taxonomy ethnicity is supported by religion (for the cases of Kazakhstan, Kyrgyzstan, and Uzbekistan) and cultural transformation is examined by language of communication. In this perspective transitional groups are formed rather than majority and minority groups. These transitional groups belong to their ethnic group through their mother tongue and religion while they are in a cultural transformation through their language of communication.

Ethno-cultural differentiation, even in the descriptive level, is very important for the assumptions of this thesis. Results show that these three

groups have strictly different features concerning abortion practice and contraceptive use in all four studied countries. Furthermore, these results give opportunity to correlate abortion practice and contraceptive use among ethno-cultural groups. It is a further step of comparing aggregate reliance of abortion and contraception between countries.

The results provide evidence of the polarization of the level of abortion practice between Kazaks, Kyrgyz, Uzbeks and Russians; and Turks and Kurds. Russians and Turks appeared with their high level of abortion use according to all indicators. Another significant result is that transitional groups, Russian speaking Kazaks, Russian speaking Kyrgyz, Russian speaking Uzbeks, and Turkish speaking Kurds, have figures between other two ethno-cultural groups. This result is significant since it confirms not only the role of ethnic identity but also the effect of cultural transformation in fertility behaviour. When percent ever aborted is taking into consideration, women experienced abortion among Russians is as twice as that among Kazaks, Kyrgyz, Uzbeks. Discrepancy is greater in the case of Turkey; women have at least one abortion is three times more among Turkish women than Kurdish women. Russians appeared with their high level of abortion use in three Central Asian countries. It is noticeable that the number of abortions per women is well above the number of births per women among Russians in Kazakhstan and Kyrgyzstan.

The level and the pattern of contraception are also examined by ethno-cultural groups. Percent of women who never uses contraception has significant variation between groups. This variation can be summarized that women who never used contraception is at very low level, around 8 percent, among Turks and Russians (excluding Uzbekistan[23]). On the other hand the same statistics go up to 20 percent for Kazaks, Kyrgyz, and Uzbeks, and 30 percent for Kurds. In spite of the variation in the level of non-user, the level of use of any method and modern method does not vary much between

[23] Unexpected results for Russians in Uzbekistan may be stem from low sample size of Russians in that country.

ethno cultural groups in studied countries excluding Turkey. On the other hand, the levels of any contraception and modern contraception are significantly different among ethno-cultural groups in Turkey. All three groups are mainly modern method users in the Central Asian cases whereas two third of women from all three groups use modern contraception in Turkey. It is very useful to see the different pattern. This result shows us that it is not possible to explain all differentiation in the abortion practice with differentiation in contraceptive use.

Results of the logistic regression analyses provide information of the predictors of ever having an abortion and use of contraception (at the time of survey). Proposed variables in the model are selected to satisfy some particular purposes. Model should involve variable which reflects *demand* for fertility regulation. “Desire for more children” is selected for this purpose. Abortion model should involve variable for contraceptive use and contraception model should involve variable for abortion practice. Variable “ever used a method” in abortion model and variable “ever had abortion” in contraception model are employed for this reason. Other variables are selected in order to reflect background of women in the model.

Regarding the evaluation of the odds ratios of the logistic model of abortion for studied countries are generally, it is observed that *number of living children, ever use of contraceptive method, wealth, consider of abortion in case of unwanted pregnancies*, and *ethno-cultural characteristic* are strongly associated with having abortion.

Detailed examination of odds ratios of the logistic regression model of abortion and contraception show that *number of living children* is the only covariate which is significant for all countries in the both model. Odds ratios increase with increasing number of living children. In other words increase in the number of living children leads to a necessary increase in the probability of abortion practice and contraceptive use.

Another result of logistic regression analysis is that women who *ever used contraception* are more likely to have abortion and women who *ever had abortion* are more likely to use contraception. Considering the main assumptions of this thesis, this result is an evidence of parallel increase or decrease of the both events rather than replacement of abortion with contraception.

Difference in the odds ratios of logistic models of abortion and contraception for *desire for more children* confirms the literature in the way that abortion is not an alternative of contraception but it is rather a last and definite chance. Results reflect that an opposite link is observed on abortion and contraception with *desire for more children*. Among women who want to give birth within two years, probability to use contraception is higher while probability to experience abortion is lower compared to women who would like to limit or space childbearing. It is possible to sum up this result, in conformity with related literature, as spacing purpose is primarily addressed to contraception while abortion is more probable in case of limiting fertility.

Results also show that *approve of contraception* emerges as significant effect on contraceptive use whereas *consider abortion in case of unwanted pregnancy* is significant on abortion. Ultimately, ethno-cultural characteristics are powerful for explaining difference in the probability to use contraception and practice abortion except for the regression model of contraception in Uzbekistan. Result of logistic regression analysis, consistent with descriptive analysis, confirms association of Russian and Turkish ethnicity with the use of both abortion and contraception. Transitional groups are again placed between other two ethno-cultural groups.

Descriptive and logistic regression analyses are evidence of two significant points. Abortion and contraception are not necessarily alternatives of each others. The crude aggregate results make us think that high practice of abortion is directly linked to low usage of contraception. On the other hand knowledge on the complexity of the mechanism of fertility

regulation pushes us to be critical. Results revealed that, even in overall country level, consumers of abortion and contraception are the same women. Especially women who use modern method of contraception are more likely to practice abortion as well. Abortion is not considered as a method of contraception but it has an important closeness with them. Abortion, just like modern methods of contraception, is a medical way of intervention on fertility. Therefore it is not surprising that women form particular background have more chance to use medical means to meet their demand. Ethno-cultural background of women which reflect cross-cultural diversity in fertility behaviour within boundaries of a country is very crucial for the assumptions of this thesis. Results of the analysis by ethno-cultural groups in all four countries improve our critique on the idea of replacement of abortion with contraception.

However observed correspondence between use of modern contraception and abortion practice is not adequate to explain complex relations in fertility regulation. Even the previous analysis present the relation between some selected characteristics with abortion practice and contraceptive use, a holistic model which involves fertility desire, practice, and mediators and moderators is needed. Causal model of contraception and abortion gains opportunity to examine these relations within a holistic perspective. The generated model aims to be a general picture of fertility regulation with a specific emphasis on ethno-cultural background in the case of Turkey. Except than ethno-cultural groups; “pregnancy intention”, “contraception one month before pregnancy” and “result of pregnancy (birth/abortion)” are employed to reflect desire and practice of child bearing in the model. Moreover, variables “education of woman”, “number of children surviving at the time of pregnancy” are used as background variables of women.

Multiple regressions between “pregnancy intention”, “contraception” and “result of pregnancy”. According to the model “pregnancy intention” has only direct effect on “contraception” but both direct and indirect effect on “result of pregnancy”. The opposite relations between pregnancy intention

and contraception, and contraception and result of pregnancy have 0.50 and 0.11 standardized factor loadings respectively while the parallel relation (direct and indirect) between pregnancy intention and result of pregnancy has 0.452 standardized factor loadings. Even the model indicates that “pregnancy intention” explains the variation in both “contraception” and “pregnancy result”, probability level of the model cannot be assigned since it is a just-identified model.

Causal model is developed by introducing “ethno-cultural groups”, “children surviving” and “education” and both direct and indirect relations of these background variables obtain more holistic picture for explaining fertility regulation. In this model, variable “ethno-cultural groups” is moderator which affects the other variables but is not affected from any variable in the model. This type of the model is called as Multiple Indicator Multiple Cause (MIMIC) model. This model fits very well in terms of all values of CMIN/DF, GFI, AGFI, and RMSEA.

The model presents direct effect of ethno-cultural groups on all variables in the model and also its indirect effect on pregnancy intention, contraception, and birth/abortion through “pregnancy intention”, “children surviving”, and “education”. Standardized factor loadings of the model show that “ethno-cultural groups” has significant direct effects on “pregnancy intention”, “children surviving”, and “education”. When ethno-cultural groups changes from Turks to Turkish speaking Kurds, and Turkish speaking Kurds to Kurds level of education increases but children surviving decreases. Despite the positive direct effect of ethno-cultural groups on pregnancy intention “pregnancy intention” is decreasing stem from mediation effect of “children surviving” from Turks to Turkish speaking Kurds, and from Turkish speaking Kurds to Kurds.

The standardized total effect of ethno-cultural groups on contraception is -0.149 whereas the standardized total (direct and indirect) effect of ethno-cultural groups on birth/abortion is 0.117. It means that

probability to use contraception and probability to end pregnancy with live birth decrease when ethno-cultural group's categories go from 1 to 3 (from Turks to Turkish speaking Kurds, and from Turkish speaking Kurds to Kurds).

Although ethno-cultural groups significantly explain the variation in the level of education, education has does not have a powerful direct effect on neither contraception nor birth/abortion. Thus mediating effect of education on contraception and birth/abortion is quite low. When indirect effects of ethno-cultural background with contraception and birth/abortion through pregnancy intention and education are considered, model shows that pregnancy intention is more powerful mediator as compare to education both for contraception and birth/abortion.

In addition to the MIMIC model, multiple group analysis by ethno-cultural groups is employed in this thesis. Results of the multiple group analysis provide opportunity to find out the variations in the structure and the level of relation for different ethno-cultural groups.

The primary finding of the multiple group analysis is that significance for the regression weight of some relation of the proposed model is not satisfactory for the second group; Kurds, and third group Turkish speaking Kurds. As it was presented in detail in Chapter VIII, among Kurds, "education" in the prediction of "pregnancy intention", "contraception", and "pregnancy result"; and "contraception" in the prediction of "pregnancy result" are not significant. The insignificant relations among Turkish speaking Kurds are "education" on "pregnancy intention" "contraception", and "result of pregnancy", and effect of "contraception" on "pregnancy result". These results are the important evidence of the fact that different causal relations are valid for Turks, Turkish speaking Kurds and Kurds in order to explain fertility regulation.

Ending the causal relation with different models of fertility regulation for Turks, Turkish speaking Kurds and Kurds is very important for the

assumption of this dissertation. Results of SEM revealed that fertility regulation is a complex and dynamic process. It is impossible to explain this process with presenting fertility related indicator separately. In other words, indicators such as contraceptive prevalence and abortion ratios by themselves give an only crude idea about fertility regulation in a population. Abortion and contraception play significant role in this process as means of fertility control. Despite their final purpose as controlling fertility, they have different roles functions considering the interrelationship with other components. An intact model to understand their relation with fertility preference and other characteristics should take this causal relation into consideration.

Complex models are especially important to see the differentiations within population such as ethno-cultural differentiation. In concordance with the assumption of this thesis, a unique fertility regulation model is not valid for different ethno-cultural groups. Results of the analysis show that contraceptive use and abortion practice have different places in fertility control and their relation with other components of the fertility regulation mechanism significantly vary for different ethno-cultural groups in Turkey. It should be mentioned that the proposed model is not the only model to explain fertility regulation. In this dissertation, the special emphasis is the ethno-cultural differentiation in contraceptive use and abortion practice. This model is generated considering the special emphasis of this dissertation. Other components of the fertility regulation model are selected to picture out relation between ethno-cultural variation and fertility control through contraception and abortion. Therefore being an example for generating a contraception and abortion model with a holistic and cross-cultural perspective will be a valuable gain for this study.

Last but not least, cultural variations are underestimated in demographic analyses not only for studies in Turkey but also in global level. In spite of the fact that inclusion of cultural dynamics into the demographic analysis has its own difficulties, this dissertation is an example of taking culture into the centre of the analysis while working with quantitative data.

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