GENDER EQUITY AND FERTILITY IN EUROPEAN BELOW-REPLACEMENT FERTILITY COUNTRIES: POLAND AND ESTONIA

A Dissertation

by

ANNA MALGORZATA IWINSKA-NOWAK

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2011

Major Subject: Sociology

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Approved by:

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ABSTRACT

Gender Equity and Fertility in European Below-Replacement Fertility Countries: Poland and Estonia. (December 2011)

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Chair of Advisory Committee: Dr. Dudley L. Poston, Jr.

Much of the recent scholarly attention has been devoted to the low fertility situation experienced by a growing number of developed countries. In this context, the theoretical framework explicitly incorporating the issues of gender in explanations of low fertility has been gaining notable popularity.

This dissertation is focused primarily on the application of McDonald's theory of gender equity to the fertility context of two post-communist "low" and "very low" fertility countries, namely Poland and Estonia. Additionally, it tests the relative importance of gender equity at the societal level and the level of the family, contrasts the results of using different operationalizations of gender equity in the family, and compares the effects of gender equity on male and female fertility.

I estimate two sex-specific models for Poland and two-sex specific models for Estonia, which respectively use three and two independent variables capturing gender equity in different institutions as well as in the family. All the models use intended

fertility as the dependent variable operationalized as either the intention to have the second or higher order birth or the number of additional children intended.

The main findings of this dissertation support the gendered explanation of low fertility in Poland and Estonia. More specifically, they indicate that gender equity in the family significantly increases fertility intentions of Polish men and women and Estonian women but not men. However, in none of the models there is evidence that gender equity in institutions outside the family matters to fertility. All in all, the findings support the gendered approach to fertility.

The results of my dissertation indicate that it is important to pay attention to how we measure gender equity. I observe some variation in the findings depending on how stringent definition of equity is used. Finally, my research suggests that the importance of gender equity for women's fertility might be more universal but it is also not completely irrelevant to the fertility of men.

I conclude this dissertation with a discussion of the implications of my findings and the potential for future development of research in this area.

To my husband and son, to my parents and sisters.

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CHAPTER I

INTRODUCTION

The General Important Fertility Considerations

The fertility of the human population is one of the most, if not the most, important subject areas in demography and has over the years received extensive scholarly attention. The reasons for the inquiries are many, the most crucial one being the critical role of fertility as the primary component of population change. Additionally, as emphasized by Morgan and Hagewen (2006), changes in fertility levels over the 20th-century have influenced individuals in the most profound ways in comparison to any other changes.

Recent reports about the growing number of countries experiencing sub-replacement fertility, particularly the European countries, have resulted in considerable concern about the effects of their low fertility levels on the populations and larger societies. These discussions and concerns are increasing in recent years because low fertility has become so widespread. In 2010, all but three European countries, namely Kosovo, Ireland, and Iceland, had a period total fertility rate (TFR) below 2.1, which is the theoretical number of births per woman needed for a country's population to replace itself under conditions of low mortality. While the fertility levels were relatively high

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This dissertation follows the style of *Demography*.

and fairly close to replacement level in some countries of northern Europe, only 1.6 children was the average TFR for Europe as a whole (2010 World Population Data Sheet). Worldwide, according to the Population Reference Bureau 2010 World Population Data Sheet, the total fertility rates of 68 countries were estimated to be below the replacement level. Among this group, 24 countries had TFRs below 1.5, which is classified by Billari as “very low” (Billari, 2004), whereas “lowest low” fertility, i.e. TFR below 1.3, was reported by 7 countries.

The concerns invoked by these low levels of fertility are well justified. Assuming no in- or out-migration, sustained very low fertility will result in a rapidly declining population, will lead to declining numbers of people in the working-ages, and will contribute to the rapid aging of the society. These demographic consequences are very much related to countries' economic growth, labor markets, taxes, old-age security systems, medical services, and long-term care, to mention only several considerations. Even small variations in TFRs across low fertility countries have major implications. Morgan and Taylor (2006) used fertility rates prepared by the United Nations Population Division for 2000-2005 to estimate the number of years it would take different countries’ populations to decrease by half. These estimates range from 1,025 years for the United States with a TFR of 2.04, 196 years for France with a TFR of 1.87, 88 years for Sweden with a TFR of 1.64, and just 41 years for Greece with its TFR at 1.25 (Morgan and Taylor 2006). Therefore, even period fertility levels of 1.7 or 1.8, which

themselves already are below replacement, will only slightly alleviate the severity of the unescapable problems of population ageing and population decline.

Recently, the subject of the dramatic global spread of low fertility was the focus of Morgan's presidential address (2004). He reviewed some of the factors responsible, at least partially, for fertility decline, focusing mainly on economic and social pressures. Importantly, he argued that while low fertility is inevitable, the same is not necessarily true about very low fertility because institutional adjustments and public policy solutions can be used to address this demographic problem.

In the context of low fertility, there are important empirical research questions that demographers have attempted to address. Researchers have been examining the spreading preferences for small families as well as childlessness, the various constraints and limitations faced by individuals who have children, childbearing at increasingly older ages, and other important factors associated with period fertility declines. Much research has been devoted to making predictions whether the low fertility rates will persist or whether the developed world can expect some fertility recovery. Studies in this area are also important for establishing whether relevant family policies can be effective or whether they need to be targeted differently to be more efficient at promoting the desired fertility increase.

In parallel, the drastic and unprecedented falls in levels of the TFR have challenged scholars to develop theoretical perspectives explaining specifically these low fertility levels. The frameworks vary and some "are not fully divorced from the

empirical and theoretical work on fertility declines from high levels or 'fertility transitions' " (Morgan and Taylor 2006: 384). However, other analyses have tended to extend beyond the classic approaches. In this context, I have become interested in recent endeavors to explicitly incorporate the issues of gender in explanations of low fertility (see e.g. Chasnais 1996; McDonald 2000a; 2000b; Presser 2001). My attention has been drawn particularly to Peter McDonald's elaboration of a "general theory of gender equity in fertility transition" (2000b: 427) which offers, in my opinion, one of the better of the recent systematizations and insightful extensions to previous academic work on this topic. In general terms, McDonald argues that greater gender equity in various social and economic institutions leads to higher fertility in advanced countries. I discuss his arguments in greater detail in Chapter II where I review the relevant literature.

My Interest in the Topic

My interest in the topic of low fertility and gender is a result of several factors. First of all, Poland, my home country, as well as other countries in Central and Eastern Europe, have experienced fairly dramatic changes in fertility after the collapse of Communism in the late 1980s and early 1990s (Sobotka 2004). In Poland "the TFR dropped from 2.1 in 1989 to 1.2 children in 2003 (...) Within the 15-year period Poland moved from the group of high-fertility countries to the group of lowest-low fertility" (Kotowska, Jóźwiak, Matysiak, and Baranowska 2008: 800). Since then, the period TFR has increased slightly to 1.4 in 2008 (i.e. a small increase of 0.17), but it remains significantly lower than the desired replacement-level of 2.1 (Central Statistical

Office 2010). In Poland, these fertility changes have led to serious discussions among political leaders and have resulted in extensive media coverage. Therefore, there is a big debate these days in Poland about the subject of low fertility, its implications, and the policies that might be introduced to address it.

Second of all, rather specific dynamics in gender relations set aside Poland and some of the other countries in Central and Eastern Europe. Under Communism, women's labor force attachment was on average higher than in the countries of Western Europe, while high national fertility was preserved. However, although the states promoted females in paid work, they also supported the traditional division of unpaid labor in the family (Pascall and Manning 2000). In post-communist societies, women's position in general has been significantly impaired by gender inequalities and gender discrimination (Frejka 2008). This is associated primarily with a significant reduction of state welfare policies (Sobotka 2004). Additionally, in Poland the situation is being reinforced by the strong religious influences of the Catholic Church stressing the importance and the primacy of women's traditional gender roles.

Finally, I find the subject of fertility and gender equity personally relevant. My husband and I now have one child, a boy born about a year ago. Planning our first child and now caring for him, my husband and I had and continue to have frequent discussions about the optimal ways of sharing our family responsibilities, especially with regard to paid and unpaid work, that would satisfy both of us. I can honestly say that these

considerations have had an important impact on my decision to have the first baby and surely affect my desires regarding future births.

The Dissertation's General Objectives

After becoming interested in the topic, I have found that the empirical studies of the implications of McDonald's theory are rather limited, although the few available suggest the importance of his claims and support his argument that gender equity is important for understanding low fertility. My dissertation is intended to contribute to this general area of inquiry. The central research questions that I will endeavor to address have been inspired by my review of the literature devoted to gendered perspectives on low fertility. I have concluded there are still some voids in the research literature. Firstly, the framework developed by McDonald has not really been used to account for the low fertility levels in the post-communist countries. Researchers have focused almost exclusively on Western European countries. I would like to contribute to the literature in my dissertation by extending the analyses to include Poland and Estonia. These two countries have distinct institutional and policy settings influencing gender relations compared to the countries studied previously, and will thus importantly enhance our understanding of the influence of gender equity on fertility behavior. Focusing on the post-communist countries is important for a major reason I have previously mentioned, albeit briefly. The history of gender relations in these societies is complex and is certainly different from the experiences of the countries studied thus far. In the former communist countries there has been some regress in gender equity during the times of

their political and economic transformations. This was associated with the fact that the relatively generous policies of the past supporting women's position in the labor market were discontinued (Frejka 2008; Macura 2000; Pascall and Manning 2000). At the same time, the economic situation in these countries tends to make dual-earner families practically the only economically viable option (Frejka 2008). All in all, it can be stated that the former communist countries have a rather exceptional history of gender relations[1], and that this should be taken into account as an important factor when testing the robustness of the implications of the gender perspective on fertility.

Secondly, according to McDonald's theory, both gender equity at the societal level and at the family level in the relations between partners will likely influence fertility. However, these two effects have only seldom been examined simultaneously at the individual level (for exceptions see Tazi-Preve et al. 2004; Olah 2003). This is usually a consequence of the lack of suitable measures. It is therefore desirable to investigate the relative importance of gender equity at the societal level and in the family in relation to fertility. In my dissertation I will attempt to address this issue.

Thirdly, in this area of research scholars have attempted to contravene the problems associated with the shortcomings of conventional demographic studies using measures of women's "status" (Mason, 1995) by using measures that more accurately capture gender equity. However, there are no common standards concerning the operationalization of gender equity at the individual level, and there is some variation in

[1] I conclude this first chapter with a more detailed discussion of this issue.

literature with regard to the conceptualization and operationalization of the independent variables. Some studies are based on the wife's relative share of housework hours, the father's and the mother's use of parental leave, the father's dedication to childcare (self-reported weekly hours), the woman's hours of housework, the husband's share of housework and childcare, contentment with the distribution of household tasks, and the perceived fairness of the household work distribution. Therefore, it seems desirable to pay attention to the operationalization of this independent variable. Thus I will compare the results of models in which the measures of gender equity in the family are based on a less and more stringent definition of a gender equal division of domestic labor.

Finally, the majority of the studies conducted so far have focused on women or couples (for exceptions see Olah, 2003; Tazi-Preve et al., 2004). Therefore one of my goals in this dissertation is to include men in my analyses and to investigate whether the effect of gender equity on fertility works in similar ways both for women and men.

To summarize, the central objective of my dissertation involves the application of McDonald's theory of gender equity to the fertility situation in two post-communist "low" and "very low" fertility countries, namely Poland and Estonia. I hope that these empirical examinations will aid in the evaluation of the robustness of McDonald's theory. The three secondary goals include the comparisons of the effects of gender equity on male and female fertility, the simultaneous testing of the effects of gender equity at the societal level and the level of the family, and finally the comparisons of the results of different operationalizations of gender equity in the family.

Structure of the Dissertation

My dissertation will consists of seven chapters. In Chapter II I will review the literature in the areas of low fertility, focusing on the gender perspectives on fertility in greatest detail as well as on a brief comparison of the male and female fertility in demographic and sociological studies. In Chapter III, I will first describe the data for Poland and Estonia extracted from the Population Policy Acceptance Survey (PPAS), which is a research instrument used in the DIALOG Project (full title "POPULATION POLICY ACCEPTANCE STUDY – The Viewpoint of Citizens and Policy Actors Regarding the Management of Population-related Change"). Second, I will discuss the operationalization of my dependent and independent variables as well as my hypotheses and I will conclude with a description of the statistical methods I will use, namely, the logistic, the Poisson and the ordinal regression equations, which I will use respectively to examine the degree of association between the levels of gender equity in different social and economic institutions and the fertility intentions (yes vs. no) and the additional number of children intended. In Chapter IV, I will provide the descriptive results for Poland and Estonia for my main independent variables of interest, namely the distribution of household tasks and perceptions about gender equity in different institution. In Chapter V, I will present the results of the logistic regression and the Poisson regression models for Polish men and women, and in Chapter VI I will report and discuss the corresponding results for men and women in Estonia based on the

logistic regression and the ordinal logistic regression. In the last chapter, I will summarize my findings and discuss the implications of the analyses.

I now turn to the final part of this introductory chapter. Here I will discuss my choice of Poland and Estonia for my analyses and provide an introduction into gender issues in both countries.

The Choice of Poland and Estonia

In general, focusing on the post-communist countries is important for the major reason mentioned earlier, namely, the peculiar history of gender relations in these societies. Especially in the first years of transitions, the trajectory of gender relations in the former communist countries has followed a compelling path, certainly not one of a unidirectional progress in women's position. An indication of this can be seen in the trend of the value of the United Nations' Gender-related Development Index (GDI). Poland's and Estonia's GDI was better than their Human Development Index (HDI) in the first years of the transition suggesting that they ranked relatively higher in the gender dimension as compared to the general dimension of the index; this is due in large part to the fact of women's high educational levels and their high rates of labor force participation. However, in the 1990s and early 2000s Poland's and Estonia's HDI tended to improve (with the exception of the early 1990s), whereas their GDI deteriorated significantly reaching its worst values in the mid-1990s (Pollert 2003; Pollert and Fodor 2005). This illustrates that the capitalist transformation has triggered some interesting dynamics in gender relations.

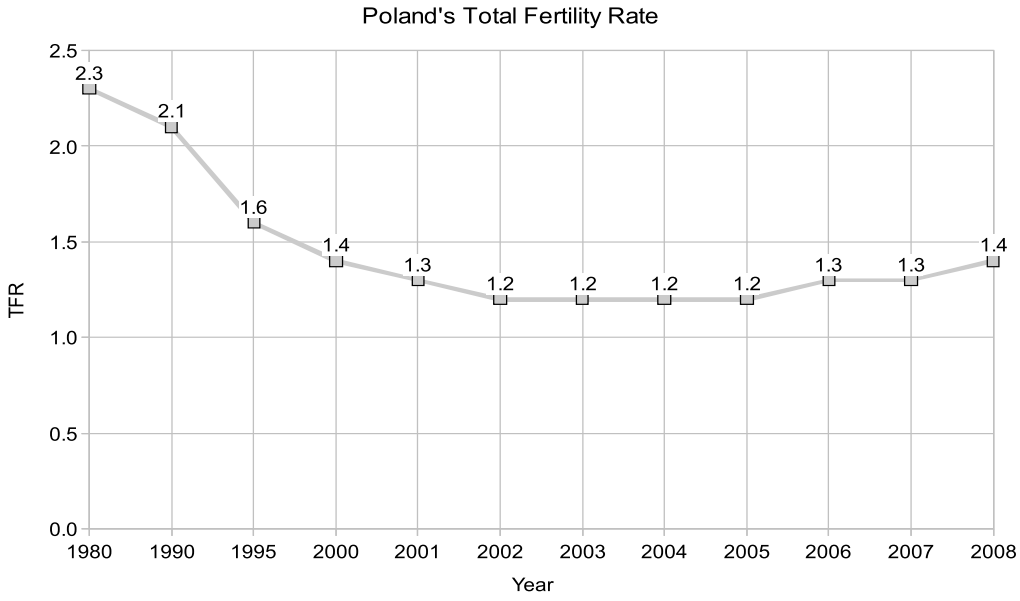
The choice of Poland was an obvious one because of my origins. Additionally, I decided to replicate as closely as possible the same analyses for Estonia. Poland has a much larger population; in mid-2010 there were over 38 million people living in Poland, while in Estonia there were but 1.3 million. Both countries have rates of natural increase equal to or very near zero (Population Reference Bureau 2010).

Fertility Trends in Poland and Estonia

Here is a brief characterization of the fertility trends of Poland and Estonia. Figures 1 and 2 below illustrate these trends for the 28 years from 1980 to 2008.

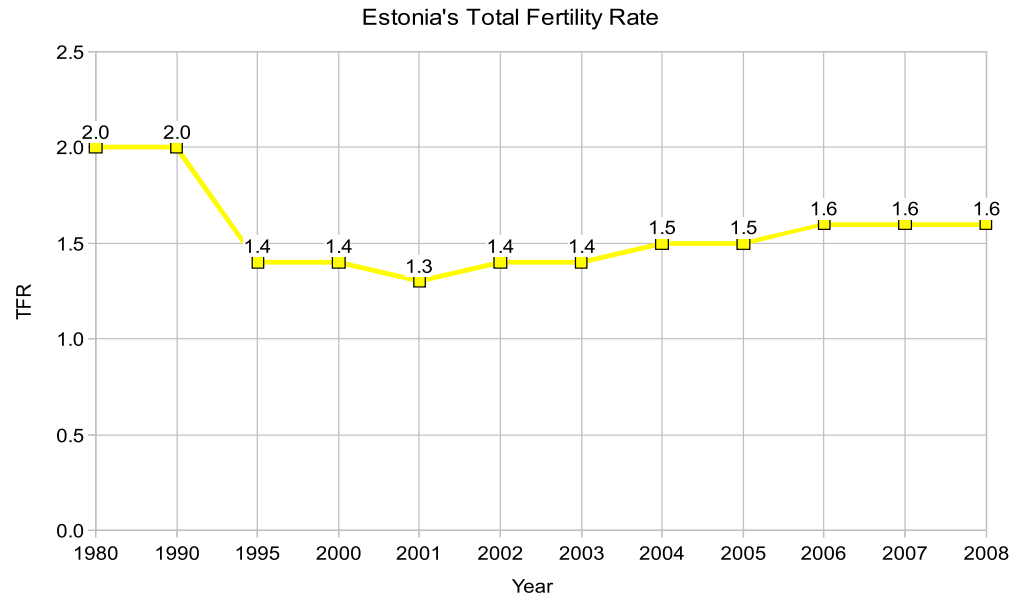
By 2000 both countries fell into the group of "very low" fertility countries, i.e., countries with TFRs below 1.5. Moreover, the fertility rates in Poland and Estonia at some point were at or below 1.3, i.e., the level of "lowest-low" fertility. Over the last 3 decades, Poland noted a very dramatic fall in its TFR from 2.3 in 1980 to 1.2 in 2002. Changes in Estonia have been slightly less substantial; the country had fertility at the level of 2.0 in 1980. In the year 2001, for which the survey data in this dissertation are used, the TFR both in Poland and Estonia was at the level of 1.3. In both countries, the TFRs have increased slightly in the last years. This trend leaves Poland among the "very low" fertility countries, while Estonia remains as a "low" fertility country, i.e. one with fertility below the replacement level.

Figure 1 Total Fertility Rate in Poland 1980-2008



Source: UNECE Statistical Database

Figure 2 Total Fertility Rate in Estonia 1980-2008



Source: UNECE Statistical Database

The period TFRs shown above are affected both by the tempo (timing) and quantum (level) of fertility. To account for changes in the age at which women give birth and the decreases in TFRs in a given period associated with the trend of putting off having children until older ages, the "tempo-adjusted TFR" should be used (Bongaarts and Feeney 1998). It is a more accurate indicator of the average number of children per woman in a given year than the conventional period TFR. Table 1 below presents both the conventional TFRs and the tempo-adjusted TFRs for Poland and Estonia for three points (and intervals) in time.

Table 1 Period and Tempo-adjusted TFRs for Poland and Estonia

Country	TFR (2004)	mean adjusted-TFR (2001-2003)	TFR (2006)	mean adjusted-TFR (2003-2005)	TFR (2008)	mean-adjusted TFR (2005-2007)
Poland	1.23	1.64	1.27	1.58	1.39	1.50
Estonia	1.46	1.95	1.55	1.85	1.65	1.90

Source: Vienna Institute of Demography European Demographic Data Sheets

Transformation in Poland and Estonia and Its Impact on Gender Equity

As the above characterizations indicate, the two countries have had fairly similar fertility patterns in the last three decades, and they share the legacy of common political, social and economic experiences. In Poland, the processes of democratization of political life and the transition from a state socialist planned economy to a free market model followed the Round Table talks, when the leaders of the Communist Party met to

negotiate with the leaders of Solidarity, i.e., the opposition movement. This eventually resulted in the establishment of the first noncommunist government in the region in 1989. The pace of introduction of the first market-oriented reforms in Poland was exceptional and the period the country experienced is often referred to as a time of ‘shock therapy.‘ A similarly radical therapy was implemented in Estonia, although the transition started in the two years after Poland, i.e. Estonia was part of the former Soviet Union until 1991, when it declared its independence. Additionally, the Estonians had to recreate the whole formal and institutional structure of the state.

As it has been mentioned, both countries experienced similar economic, political and particularly family policy realities in the Soviet era. However, the extent of benefits and entitlements for parents that each was able to maintain or recover when the transition began differs significantly, with families in Poland being in the more disadvantaged position (Szelawa and Polakowski 2008).

I will now discuss how the collapse of Communism affected gender equity in Poland and Estonia. More specifically, I will consider the impact of the old and new institutions on the situation of women and gender relations. I begin by discussing for each country the situation of women in education and in the labor market under the old regime and in the years that followed its collapse. I then review how the changes in the family arrangements, primarily in child care and parental leaves, affected the situation of women. Finally, I examine women in families under Communism and in the years of the capitalist transformation.

The Impact of the Old and New Institutions on the Situation of Women in Education

Women in communist Poland and Estonia recorded significant gains in educational attainment (Anderson and Vöörmann 1996; Bialecki and Heyns 1993; Paci 2002). Despite the lagging economic growth, gender equity in education increased relatively early in both countries. According to data provided by UNESCO (cited in Bialecki and Heyns 1993), Polish women outnumbered men in post-secondary enrollment by the early 1970s. By the late 1970s Estonia was the single republic in the former Soviet Union, in which women, on average, fared better educationally than men (Titma and Saar 1996).

Titma and Saar (1996) and Bialecki and Heyns (1993) argue that this high educational attainment of women was the incidental result of the educational policy of the communist state and the institutional development of education. Policy in Poland favored vocational and technical schools which were growing rapidly and were attended primarily by males. This resulted in high enrollments of women in programs of lycea which translated into higher participation rates of women in colleges and universities. Bialecki and Heyns thus argue that the high level of gender equity in education under Communism was "the unintended result of vocational policies, rather than the product of policies aimed to create gender equality" (Bialecki and Heyns 1993: 131). Similarly in Estonia, since the 1960s males were choosing mostly lower-quality vocational and specialized secondary schools, while females dominated among the students of general

secondary schools; thus the universities became feminized (Titma and Saar 1996). It is important to note, however, that women's higher education did not translate into a privileged position in the labor market. Under socialism, most of the economic resources were distributed among the highly favored, mostly male manual workers employed in heavy industry (Bialecki and Heyns 1993).

After the collapse of Communism, women continued to slightly outnumber men among post-secondary schools' enrollees, and in general the transition seems to have resulted in an increased enrollment of female students in higher education compared to the share of males (Magno and Silova 2008; Paci 2002; Pollert 2003; Titma and Saar 1996). By 2005 the percentage of females in higher education in Poland increased to 56.5%, while the corresponding share in Estonia was even higher at 61.6% (Magno and Silova 2008). High educational attainment is still characteristic of females. However, unlike in the past period, in a market economy high educational credentials are imperative for women if they want to pursue political or professional careers (Fuszara 2000; Pollert 2003 and 2005).

The Impact of the Old and New Institutions on the Situation of Women in Market Employment

Moving on to the employment of women, in the early years of socialism, great numbers of women started taking up jobs, and the female economic activity rates in Poland and Estonia were very high in worldwide comparisons (Ciechocinska 1993; Haltiwanger and Vodopivec 1999; Leven 2008; Pollert 2003; Pollert and Fodor 2005;

Rouxel-Laxton 2001; Saxonberg and Sirovátka 2006; The MONEE Project Regional Monitoring Report Summary 1999). Additionally, women in these countries tended to work full-time throughout their lives, which was not the case in Western countries (The MONEE Project Regional Monitoring Report Summary 1999). While females constituted between 35 and 45 percent of the labor force in the OECD countries in the 1980s, the corresponding levels in Poland and Estonia were higher with women representing almost half of the workforce in the late 1980s (Kramer 1995; Pollert 2003). Actually, in the 1970s and 1980s in Estonia women comprised as much as 55 percent of the working force.

Women's access to paid work was a result of a labour-intensive economy and a policy of full employment (Balcerzak-Paradowska, Chłoń-Domińczak, Kotowska, Olejniczuk-Merta, Topińska, and Wóycicka 2003; Ciechocinska 1993; Kotowska 1995). The labor force participation of both men and women was strongly encouraged by the communist states, primarily because of the labor shortages experienced in the countries, and employment was considered to be both a right and a duty (Paci 2002; Rouxel-Laxton 2001). Additionally, from the perspective of individuals, in the context of the a low wage policy, the additional income of the woman was needed to support the family; a single salary was not high enough to sustain a family (Rouxel-Laxton 2001). Employment was also associated with numerous social benefits (Kotowska et al. 2008; Marody and Giza-Poleszczuk 2000; Pascall and Manning 2000; Saxonberg and Sirovátka 2006).

With regard to gender equity issues, the communist governments constructed women's participation in paid work as their path to emancipation and gender equality (Heyns 2005; Kotowska 1995; Pascall and Manning 2000). All these aspects resulted in high labor force participation of males and females and reduced the pay gap between the genders (Paci 2002).

Although such high labor force participation of women would suggest relatively high levels of gender equity in market employment, there are a number of issues that might undermine such straightforward evaluations. Firstly, for instance in Poland, despite the fact that the gender pay gap was still relatively small compared to Western European countries (Pascall and Manning 2000), the differences did amount to between 20 and 40% in female wages as compared to those of men in similar positions (Marody and Giza-Poleszczuk 2000). Additionally, some scholars argue that the participation of women in the labor market depended largely on the phase of development of the economy in communist Poland. Heinen and Wator state that "the mobilization of the female workforce depended upon economic interests and the demands of the labor market as much as or even much more than the principle of equality" (2006: 192). Finally women were to some extent forced into productive work. "Work was a duty, not a right" (LaFont 2001: 205).

In Estonia, while the majority of women were in the labor force, the general satisfaction with work was not high because of the burden of domestic duties shouldered by the women (Anderson and Vöörmann 1996). Finally, scholars emphasize that it is

important to recognize that the relatively high levels of gender equity in employment were a result of pressures from outside conditions rather than an outcome of genuine social changes (Leven 2008; Matysiak 2005).

It is widely acknowledged that the political and economic transitions in Poland and Estonia impacted in profound ways the situation of women in market employment. Scholars who have studied these issues in the entire post-Soviet region often offer contradicting predictions and arrive at different conclusions (Spehar 2006). Some argue and provide supporting evidence that women could actually benefit from changes in the economy or at least maintain their position owing to their human capital credentials that are highly valued in a market economy. Furthermore, women recorded high levels of employment in services which have been experiencing important growth compared to the declining heavy industry sector. Therefore the shifts in the industrial structure following the transformation were favorable to women (Leven 2008; Rouxel-Laxton 2001; Spehar 2006; Van Der Lippe and Fodor 1998). A contrasting perspective emphasizes ideological factors leading to a different outcome. This literature focuses on the fact that the adverse response to the long years of communist oppression and propaganda was likely to revive expectations of traditional gender roles and result in pressures to enable women to step out of involuntary employment. Particularly stressed with regard to Poland has been the role of the Catholic Church and its promotion of the home as the place for females (LaFont 2001; Spehar 2006; Vand der Lippe and Fodor 1998). Within this framework, the economic transition was assumed to result in a regress

in gender equity in the labor market - decreased female labor force participation and higher unemployment among women.

In general, job security declined and unemployment increased significantly for both men and women in Poland and Estonia, with a concomitant increase in the gender wage difference since the capitalist transformation. The previously high rates of female labor force participation declined to levels closer to those prevalent in the OECD countries. The worsening of the situation of women has resulted in the deterioration of the GDI ranks of the countries mentioned before, which were previously driven up by women's employment and earnings (Pollert 2003).

Despite similar communist legacies in various spheres, the employment situation of Polish women differs significantly from that of Estonian women. In general, Polish women are described mostly in terms of the worsening of their position in the labor market.

Although the economic upheaval of the transition years resulting in immense layoffs had an effect both on Polish men and women, the latter group suffered disproportionately and had more problems finding new jobs as the demand for women has diminished (Ciechocinska 1993; Fuszara 2000; Glass and Kawachi 2001; Heinen and Wator 2006; Kotowska 1995; Pakszys and Mazurczak 1994). In the early 1990s the unemployment rate for women was around 15%, and around 12% for men. In the early 2000s the corresponding figures increased to 18% and 14% (Balcerzak-Paradowska et al. 2003). Interestingly, in a study of three CEE countries, Poland, Hungary and

Slovakia, in which unemployment rose sharply in the 1990s, Fodor (1997) found that only Polish women were directly discriminated against as indicated by their higher odds of becoming unemployed. In addition, women tend to be openly discriminated against when they seek employment because employers try to avoid the higher costs they incur when female employees fulfill their roles as mothers. "Although most of the constitutions have made social entitlements gender neutral (e.g., fathers are eligible for parental leave), it is usually mothers who take time off from work for childcare responsibilities. As the state begins to shift the economic burden of social entitlements to private industry, women, as potential mothers, become expensive to employ" (LaFont 2001: 210). Women are sometimes forced to reveal their fertility plans and their current family situation or sign agreements limiting their potential future use of maternity benefits (Leven 2008; Plomien 2004).

In Estonia, the unemployment of both men and women increased significantly during the transition period, but the impact on the situation of women has been less severe (Eametes, Philips, and Annus 1999; Pollert and Fodor 2005; Rouxel-Laxton 2001; Vodopivec 2002). During the first years of the transition, unemployment was greater among women and the unemployment rate of men was about 1 percentage point lower, indicating that women were the ones to be initially affected by the dismissals (Eametes et al. 1999, Vodopivec 2002). This situation lasted until the mid 1990s. Already in 1995, the unemployment rate of men of 10.8% exceeded the women's rate of 8.8% (Vodopivec 2002). This lower unemployment rate of women is the consequence of the fact that

women were more likely to become inactive in contrast to men, who did not leave the labor force (Eametes et al. 1999; Vodopivec 2002).

Despite all the unfavorable changes in the new job market, women's labor force participation has remained rather high in both countries and exceeds the rates of the countries in Western Europe (Klenner and Leiber 2010; Paci 2002).

This overview of the situation of women in the labor market suggests that overall gender equity in employment has deteriorated. This is largely associated with the changes in the levels of gender equity in institutions supporting the family that I will now discuss. Nevertheless, the predictions of some scholars that women would return to being full-time homemakers are not being realized, although there was a small indication of this in Estonia. Mostly for economic reasons, women continue to constitute a large share of the labor force in Poland and Estonia. In addition, women for whom the role of a worker became part of their lives, tend to object to quitting the labor force (Rouxel-Laxton 2001). I now move to a discussion of the sphere of institutional arrangements related to the family.

The Old and New Institutional Arrangements Related to the Family

It is widely acknowledged that institutional arrangements such as family policy regulations affect the labor force participation opportunities for women in a significant way mainly because they discourage or encourage them to seek employment as well as discourage or encourage employers to hire them. Additionally, "(s)ocial policies reflect assumptions about gender relations within households and affect those relations" (Pascal

and Manning 2000: 250) and thus they tend to determine the patterns in the division of care and domestic work between men and women. Therefore, it is important to analyze these solutions from the perspective of how much gender equity they promote. One can look at these different institutions within the broader category of family support arrangements along the dimensions identified by Hofäcker (2003), i.e. monetary transfers - both direct and indirect, and reconciliation of family and work - leave schemes and public child care. It is, however, the latter group of institutions that are "highly beneficial to the employment of women and hence to a higher level of gender equity" (McDonald 2000b: 8).

Under Communism in the socialist countries of Central and Eastern Europe, the systems of institutional arrangements related to the family perceived women not as wives or mothers but as individuals. The support granted to families by the communist government was in general regarded as very generous and extensive. The paid maternity and childcare leaves with guaranteed employment upon return to work, as well as the development of state- and factory-run child care facilities, are often emphasized as enabling the reconciliation of work and family (Fodor et al. 2002; Glass and Fodor 2007; Plomien 2004). These entitlements were considered fairly high compared to the standards prevalent in the Western European countries (LaFont 2001; Saxonberg and Szelawa 2007). They did in fact result in the high rates of female labor force participation already discussed above, while preserving high national fertility (LaFont

2001; Brainerd 2000; Paci 2002; Pascal and Manning 2000; Pollert and Fodor 2005; The MONEE Project Regional Monitoring Report Summary 1999).

After World War II, in communist Poland a system of family policy regulations was developed to support the state's commitment to gender equality and its goal of increasing women's entrance into the labor market (Glass and Fodor 2007; Heinen and Wator 2006; Pascall and Manning 2000). These measures were intended to "minimize existing conflicts between occupational and family obligations by granting more privileges, extended maternal and childcare paid leave of absence, family allowances, family support funds, restriction of pregnant and nursing women's working hours, and free health care" (Lobodzinska, 1995: 7 in Pascall and Manning 2000).

Child Care and Leave Schemes

Communist Poland was characterized by a high increase in investments in public child care facilities (Heinen and Wator 2006; Saxonberg and Sirovatka 2006). However it should be noted that the intensity of these investments varied over time and depended largely on the stage of Poland's economic development (Heinen and Wator 2006). Additionally, despite the explicit commitment of the government to expanding the number of places available in child care facilities, the supply achieved before 1989 was nowhere near meeting the demand. Moreover, the facilities were increasingly overcrowded and accommodating children in numbers that far exceeded their designed capacity (Heinen and Wator 2006; Saxonberg and Sirovatka 2006).

"In Soviet Estonia (...) women were workers first" (Kennedy and Einasto 2006: p 8). Their family responsibilities of childrearing were to a great extent taken over by the state. There were child care facilities organized by workplaces and they were available even for very small children (Kennedy and Einasto 2006).

With regard to leaves, a maternity leave paying 100% of a woman's salary was introduced in Poland to compensate for the woman's lost income in the first 16 weeks when she stayed at home (Balcerzak-Paradowska et al. 2003). Regulations regarding childcare leave were changed during the communist period. The one-year, unpaid leave enacted in 1968 was lengthened to three years under pressures to extend pay also to this entitlement. And "in 1981, child care leave was transformed into parental leave applicable to the father (but only in certain cases) and paid according to family income per person" (Heinen and Wator 2006: 195).

In Estonia, the major changes in the legislation regulating the sphere of parental leaves were introduced in the mid-1950s. They enacted a maternity leave of 112 days, part of which was to be taken before and the remaining part after the birth of the child. Women on leave were compensated at 50-100% of their previous wages. In the early 1980s, a paid childcare leave was introduced, which could be used until the child was 12 months old, while unpaid leave was available to Estonian mothers of children of up to 18 months. These leaves were further extended in 1989; the paid childcare leave was lengthened to 18 months, while the unpaid leave could be used until the child's third birthday. Also, in 1990 new legislation was introduced, which made it possible for

another member of the family, other than the mother, to use the paid parental leave (Ainsaar 2001; Kaupuza 2005; Kennedy and Einasto 2006).

In regard to gender equity promoted by these institutions, we can conclude that the commitment to the provision of free or affordable child care services tended to limit the women's responsibility for care (Pascall and Manning 2000) and enabled them to participate in the labor force. It thus contributed to them becoming more equal to men in this sphere of life. "Engels thought the state would socialize childcare and women would become equal to men, not because men began sharing in the child-raising and household chores, but rather because mothers would no longer be responsible for these tasks" (Saxonberg and Szelawa 2007: 356 citing Kantorova´ and Stasˇova´ 1999).

On the other hand, the fact that the leave schemes were initially targeted only at women (and the maternity leave remained as such throughout the whole communist period) and that the parental leave allowances were very low, these particular measures promoted inequity between men and women by reinforcing women's responsibility for domestic work.

The transformation has brought significant changes in the amount of social support granted to working mothers. In general, the generous benefits for families with children not sustainable by the new governments and the employers who faced various pressures in the free market. However, Estonia belongs to a small group of countries, in which the extent of the provisions was kept fairly intact (Pascal and Manning 2000; Pollert 2003; Pollert and Fodor 2005).

In Poland, in most general terms, the once relatively generous benefits were substantially reduced (Balcerzak-Paradowska et al. 2003; Fodor et al., 2002; Heinen and Wator 2006; Matysiak 2005; Pascall and Manning 2000; Saxonberg and Sirovátka, 2006). Financial constraints in the state budget and a simultaneous requirement to accommodate the needs of the growing numbers of people in poverty have been one of the major contributing factors (Balcerzak-Paradowska et al. 2003). The changes were marked by reducing the responsibility of the state for family issues and simultaneously shifting the task to the family itself and the market. Family policies in post-communist Poland tend to be defined within the framework of a "market-oriented model" in which "the government leaves more to the market" (Saxonberg and Szelawa 2007: 360), as a "form of "private maternalism" in which the market and the family have become the primary institutions of welfare provision" (Glass and Fodor 2007: 325) or as a model of "implicit familialism" characterized by the lack of access to affordable child care and low level of benefits (Szelawa and Polakowski 2008).

The situation in Estonia has been quite different. A large share of the Soviet provisions granted to families of working mothers with children, despite the collapse of the system, was kept intact, or only minor changes were introduced. Furthermore, universal benefits tended to dominate over mean-tested entitlements and there is common recognition that effective social policies are a necessity to deal with the difficult demographic situation of the country (Kaupuza 2005, Kennedy and Einasto 2006). Since the mid-1990s the policies in Estonia have been classified as a "female

mobilizing type" because of the high extensiveness and quality of child care services accompanied by universality but low generosity of parental leave benefits, which mean that there are no incentives for caring for children at home (Szelawa and Polakowski 2008).

In the sphere of child care, the reduction in spending of the state resources on these services has been the most significant change in Poland (Matysiak 2005; Glass and Fodor 2007; Saxonberg and Szelawa 2007). Numerous child care facilities have been closed significantly reducing the number of places available in such centers, despite the high demand (Balcerzak-Paradowska et al. 2003; Heinen and Wator 2006). Before 1989, the responsibility for the funding and running the centers belonged to state administration and state-owned organizations (Balcerzak-Paradowska et al. 2003). In post-communist Poland, local governments at the lowest administrative level took over the responsibility for the provision of child care. However, they were significantly constrained financially in implementing this role and were forced to compensate the high costs associated with these services by raising the fees paid by families (Balcerzak-Paradowska et al. 2003). Also, the public facilities that have been privatized offer services at costs that are extremely high in relation to average monthly salaries (Glass and Fodor 2007; Glass and Kawachi, 2001, Pollert and Fodor).

In Estonia, the number of child care facilities was also reduced, declining by 14% (Orazem and Vodopivec 2000). However, because of the decrease in the number of children, the share of children in day care centers in the late 1990s was fairly close to

that in the 1980s, when it was the highest, amounting to almost 70% of children between 1 and 6 (Ainsaar 2001). As in Poland, the costs of placing a child in kindergarten went up. However, the maximum costs charged to parents were regulated by law and 20% of the minimum wage is set as the maximum amount that parents may incur (Ainsaar 2001). Eventually, there have been remarkable differences between the two countries in child care enrollments rates of children aged under 3 in the 2000s. The rate of 2% in Poland, which did not change by even 1% between 2000 and 2008, is substantially lower than the enrollment rate in Estonia. Estonia had a negligible increase over the period, but had a fairly high rate of 32% to begin with in 2000-01 (UNECE Statistical Database).

In regard to maternity and parental leave schemes, these have been changed a few times in post-communist Poland. One of the major alterations regarded the maternity leave paid at 100% which was increased from 16 to 20 and eventually to 26 weeks. But within two years its length was decreased to the initial period. Also, in 2001 two weeks of the maternity leave were made available to fathers (Balcerzak-Paradowska et al. 2003). The parental leave has been kept at its original length of 3 years, but the eligibility criteria for the income-tested leave benefits have been seriously restricted, resulting in reduced coverage of the policy (Balcerzak-Paradowska et al. 2003; Saxonberg and Szelawa 2007).

In Estonia, no major changes have been introduced with regard to maternity and parental leaves. Therefore, the Estonians may take advantage of a maternity leave which lasts 140 days (i.e. 20 weeks) while being compensated at 100% of the average earnings.

Additionally, paternity leave of 10 working days is available to fathers, although there is no payment granted during this leave. Childcare leave is granted per family, so either parent can use it. Since 1992 the childcare leave until the child reaches 3 years of age is associated with two kinds of benefits, namely the parental and child care benefits (Aidukaite 2006; Ainsaar 2001; , Kaupuza 2005; Kennedy and Einasto 2006; Orazem and Vodopivec 2000).

Looking at the post-communist institutions aimed at the reconciliation of family and work, they have mostly had a negative impact on gender equity, although legislation is still more favorable to motherhood in Estonia than in Poland (Kennedy and Einasto 2006). Most importantly, since the rise in care responsibilities usually adds to gender inequality in the family and in market employment, in Poland the negative changes involve primarily the reduced provision of affordable child care. In addition, the maternity leave scheme in its current form (especially the formal extension of the entitlement to fathers) does generally promote relatively high levels of gender equity. It makes it possible for women to just temporarily quit their status as workers but maintain their position in terms of wages and status and is pretty standard in comparison to solutions implemented in Western European countries. However, the same cannot be said about the long parental leave because such extended breaks in professional activity may lead to human capital depletion (Paci 2002). Also, the fact that the benefits are mean-tested in Poland and, although universal, are fairly low in Estonia, discourages men from taking the leave. In general, it is argued that entitlements considered beneficial

under Communism and implemented to enable women to participate in the labor market, have now grown to be associated with the discrimination against women in employment. This is mostly because policies of full employment and guarantees of secure employment are no longer in place under the free-market economy (LaFont 2001; Plomien 2004; Pakszys and Mazurczak 1994). Also, the fact that more and more businesses are privately owned and thus not controlled by the state may discriminate against women, especially those in the childbearing ages, because their employment is more expensive; it is associated with incurring the costs of obligatory entitlements for women on maternity leave and securing the employment of the mother on leave while finding a temporary replacement (Brainerd 2000; Kennedy and Einasto 2006; Paci 2002, Pollert 2005). For these reasons "women's, especially mothers' position in the labour market is more vulnerable" (Kennedy and Einasto 2006: 17), and men are the preferable potential employees.

Finally, as will be discussed in more detail in Chapter II, McDonald emphasizes the significance of the level of gender equity within the family itself noting that "the institutional or organizational form of the family constitutes an important part of a society's idealized morality. As such, family is one of the defining principles of the culture of every society" (McDonald 2000b: 5). Therefore, I will conclude this chapter by discussing women's position in the family and how it has changed over the last 3 decades.

Women's Position in the Family

Prior to 1989, the communist government explicitly promoted gender equity between women and men in their working lives and significantly improved the professional opportunities of women. Despite this fact, patriarchal norms nonetheless prevailed and there were no efforts to question the unequal participation of men and women in household work nor to encourage men to take on any responsibilities for domestic tasks. Therefore, the division of work within the family was extremely gendered. High female labor force participation coexisted with perceptions of very traditional family roles of males and females. Women performed as much as 80% of all domestic work. And since the majority of women were working full-time, they bore the double burden of paid and unpaid work. The domestic work was particularly hard and time-consuming because few modern domestic appliances were available (Balcerzak-Paradowska et al. 2003; Brainerd 2000 Heinen and Wator 2006; Kennedy and Einasto 2006; Klenner and Leiber 2010; LaFont 2001; Lobodzinska 1997; Paci 2002; Saxonberg and Sirovátka 2006). "Mothers' (and parents') needs were defined within the general gender and family ideologies of the communist parties. These emphasized the importance of women's participation in the paid labor force, although this participation did not have to be of the same value or intensity as that of men. (...) Although both husband and wife were expected to work outside the home (...) policy makers did not intend to transform men's role within the domestic division of labor" (Fodor et al., 2002: 480). The communist state made the effort to transform the perceptions of women as

employees equal to men in order to extend the available work force, but it never intended to change the perception of women as natural homemakers in contrast to men. Men therefore assumed little if any of the home responsibilities, but as I have mentioned earlier, women received extensive support from the state in the form of family policies. And thus "the state's appropriation of many parental duties - especially of childcare – helped individual women and men to avoid confronting in their own homes and partnerships questions of gender balance related to household work and family responsibilities" (Paci 2002: 10).

In the transition period, the situation regarding gender equity in the family was slightly different in Poland and Estonia, although the differences are not large.

In Poland little has changed and housework and childcare responsibilities continue to belong primarily to women (Balcerzak-Paradowska et al. 2003; Davis and Greenstein 2004; Fodor et al. 2002; Klenner and Leiber 2010; Kotowska et al. 2008; Matysiak 2005; Saxonberg and Sirovátka, 2006). Additionally, the transitions in family policies described above, particularly the decrease in the availability of affordable child care in Poland, have actually added to the burden of women's work at home and negatively impacted them in terms of gender equity in the family through the increase in the actual amount of work for which they are responsible. In Estonia, the situation of women as nurturers and homemakers was affected to a lesser extent because the changes in the family support services were not as substantial. However, the Estonian women

also continued to be the member of the household with the majority of the domestic responsibilities.

In the context of the division of domestic work in Poland, the results of Matysiak's analysis (2005) are interesting. This scholar found that the model of the family in which both partners work but only the woman is responsible for the unpaid work at home as well as the traditional model of the family are the ones most commonly practiced. These were found to be the dominant arrangements, despite the fact that the majority of partners - both male and female, expressed their preferences for a family in which the professional and domestic responsibilities would be shared by the man and the woman.

It is also worth mentioning that although in the post-communist period there have not been any major changes in the division of domestic work as compared to the previous years, there have been some small shifts. The analysis of Balcerzak-Paradowska and her colleagues (2003) suggests moderate progress towards equality when one compares the 1984 data with 1996 data: "the mean average household work time for men rose from 2 hours and 10 minutes to 2 hours and 36 minutes per day, while for women the mean decreased from 5 hours 9 minutes to to 4 hours 50 minutes per day" (2003: 219).

In Estonia, before the transition period, there were some signs that housework had started being shared more equally (Haavio-Mannila and Rannik 1987). Although women continued to be disproportionately responsible for running the household, there

was some movement toward increasing men's involvement, and more equality in domestic work could be recognized. This is detected by comparing the parental and present families. Generally in the present families "the traditional division of labour at home seems to be giving way to a more shared division of domestic work" (1987, p: 361).

Currently, the situation of women in Estonia regarding domestic duties, is slightly more favorable compared to that in Poland. In the early 1990s, about 44% of the husbands and 35% of the wives in Estonia claimed that the housework was done in about equal shares, while 8% of men and 22% of women stated that housework was always done by the wife. Significant differences compared to the situation in Poland can be noted. The corresponding percentages for sharing household duties equally were 19 and 14%, while as many as 52% of women and 33% of men admitted that the responsibility for domestic chores fell exclusively on the wife. With such reported patterns in the performance of domestic work, it was more likely for individuals in Estonia than in the United States to report that at least half of the labor in the family was performed by the husband, while the proportion was significantly smaller in Poland (Davis and Greenstein 2004). The differences between Poland and Estonia have narrowed in the 2000s, and in both countries the household work is still primarily the responsibility of the woman. According to the 2004 European Social Survey data, women in Estonia were responsible for as much as 65% of the couples' housework, while women in Poland performed 70% of the work (Julicher 2010). According to the UNECE data the differences between

Poland and Estonia in the average time women and men spend on domestic work per day were minuscule. In 2000 in Estonia, women devoted 4.88 hours to domestic work, while men contributed 2.55 hours. The corresponding numbers of hours for Polish women and men was 4.75 and 2.37. Therefore the relative burden of domestic work carried out by women and men is fairly similar in both countries: around twice as much work is performed by women.

In general, we see that the transitions in Poland and Estonia have had very little impact on gender equity in the family.

This discussion of family life concludes my review of the major changes in gender equity in Poland and Estonia associated with the collapse of Communism. My review suggests that, except for the family, after the transition there has been slightly more gender equity in the Estonian economic and social institutions. I elaborate this point later in Chapter III when I present my hypotheses.

In the next chapter, I review the literature in the areas of low fertility, focusing primarily on the gender perspectives on fertility.

CHAPTER II

LITERATURE REVIEW

In this second chapter I will discuss the relevant theoretical and empirical literature focusing on the main theme of my dissertation, namely, the relationship between gender issues and fertility. First I will provide a very general introduction to the theoretical context, in which the gender perspectives have been developed. Then I will review the theoretical perspectives that inform the analyses I will perform in this dissertation, followed by an overview of the available empirical evidence in this area of inquiry, i.e. the specific impact of gender equity on fertility. I conclude with a discussion of the limitations of the literature and the specific areas on which I focus in my dissertation.

Introduction to Gender Perspectives on Fertility

Fertility transitions and the recent pervasiveness of low fertility have generated a substantial amount of empirical and theoretical work. Hirschman (1994), van de Kaa (1996), Mason (1997), McDonald (2001), Caldwell and Schindlmayr (2003), and Morgan and Taylor (2006), to mention a few, provide rather comprehensive reviews of the predominant fertility theories, with the latter three analyses concentrating specifically on the theoretical paradigms focusing on low fertility. The range of focus of these theoretical contributions is broad and includes perspectives that emphasize economic factors (Becker 1981), risk and high levels of economic uncertainty (see e.g. Kohler,

Billari, and Ortega 2002), the institutional environment (see e.g., McDonald 2000a and 2000b; Rindfuss and Brewster 1996), and ideological changes and post-materialist values associated with the second demographic transition (see e.g. van de Kaa 1987). Two points are worth mentioning with regard to the low fertility paradigms. First of all, some of the traditional fertility explanations offer predictions that are in stark contrast to the observed low fertility trend; for instance, in places expected to have relatively higher fertility levels, women demonstrate surprisingly low childbearing patterns and vice versa. Additionally, along lines similar to Mason's statement that "although there are many theories of fertility transition, each containing important ideas, none provides a complete explanation for all known fertility declines" (1997: 445), in his review of the theoretical explanations of low fertility, McDonald (2001) suggests that we should not expect a general and comprehensive low-fertility theory but that "explanations for low fertility are likely to be found in different weightings for different societies" (p. 4) from among a variety of existing perspectives.

According to economic or demand theories (Becker 1981, 1985), which have an important status in fertility studies, individuals' and/or couples' decisions about having children are based on costs and benefits calculations. There are two general categories of the costs of children - direct monetary costs associated with feeding, clothing, and educating the child, and opportunity costs which account for women's forgone earnings resulting from time devoted to having and raising a child as well as from the fact that women's wages after their return are negatively impacted by the interruption in their

attachment to the labor force. Becker states that women's higher investments in human capital and increased engagement in paid work tend to improve their earning power and thus result in higher wages. As a consequence, the cost of the time that women spend on childrearing. i.e. the opportunity cost, rises and this reduces the demand for children. This perspective points to women's labor force participation as the major determinant of low fertility. It strongly emphasizes the incompatibility between having children and women's paid work; women's expected gains from market work create a negative pressure on their fertility behavior.

The main implication of the economic theory is that there is a strong negative relationship between female labor force participation and fertility levels, both at the individual and the macro level. However, a reversal in this predicted anti-natal association at the macro level has recently been observed (Brewster and Rindfuss 2000; Rindfuss and Brewster 1996; Rindfuss, Guzzo, and Morgan 2003; Sleebos 2003), and it has met with a lot of interest in the theoretical and empirical realm. This reversed relation is a recent phenomenon that occurred in mid 1980s. At the individual level, however, the relationship remains negative.

An alternative approach for viewing the association between childbearing and women's work has developed out of this new empirical finding. In place of the universal hypothesis about the incompatibility between women's paid employment and fertility, it is now assumed that the relationship can vary across different countries and historical periods (Rindfuss et al. 2003). The focus has moved away from looking at the level of

female wages and, by implication, the level of opportunity costs, to the discussion of the extent to which women have or lack the possibility of combining work and family and the level at which the temporarily reduced contributions of the female to the family budget are compensated. The institutional and policy environments come to the forefront as an important mediator of the relationship. McNicoll (1980, 1994) laid the groundwork for this emphasis on the institutional setting. He argued that scholars need to account for how "institutional factors mesh with conventional income and price changes on the one hand and cultural change on the other in influencing decisions bearing on fertility" (1980: 449).

Therefore, in response to the findings about the supposedly inconsistent, positive macro-level association between women's labor market engagement and fertility (Brewster and Rindfuss 2000; Rindfuss and Brewster 1996; Rindfuss et al. 2003; Sleebos 2003), recent explanations of women's childbearing behavior have extended the conceptualization of the individuals' decision-making environment to include the institutional constraints affecting their reproductive choices. Special attention has been given to the variation in welfare state provisions and services available in the market. Rindfuss and Brewster (1996) stated that across advanced industrial countries, work and child care are differently socially organized; in some cases this escalates, and in other cases it reduces, the difficulty in combining the mother and worker roles. Therefore, the "social organization of work and childcare arrangements" can be defined as the mediating mechanism of the relationship between female paid work and fertility. "(I)

nsofar as women's participation in the paid labor force acts to constrain fertility, any easing of the conflict between work responsibilities and childrearing will lead to an increase in fertility, other things being equal" (Rindfuss and Brewster, 1996: 282). Along similar lines, DiPrete, Morgan, Engelhardt, and Pacalova (2003) argued and empirically demonstrated that the fertility-reducing impact of women's opportunity costs depend on a "country's particular mix of policies and institutional characteristics and also on the distribution of values in that society" (p. 445). Castles (2003) also indicates that the reversal of the relationship between fertility and women's labor market engagement can be attributed to changes in women's work and family preferences as well as the family-friendly policy environment (for further discussion of the topic see also Brewster and Rindfuss 2000; Kohler et al. 2002; Neyer and Andersson 2008; Rindfuss, Brewster, and Kavee 1996; Rindfuss et al. 2003; Sleebos 2003).

In the context of the discussion surrounding the reversed macro-level association between women's paid work engagement and fertility, issues of gender have attracted much attention in the low fertility literature. The significance of gender in demographic research was first acknowledged only in the early 1980s (Mason 1995). McDonald (2000b) admits that gender was not found to be an important predictor of the onset of the fertility transition, but that it may be a significant determinant in the context of the continuous fall of fertility. Thus, in recent years gender has been more explicitly incorporated into fertility theories (see e.g. Chasnais 1996; McDonald 2000a; 2000b; 2001; 2006; Presser 2001). The theoretical and empirical contributions examining the

impacts of different aspects of gender relations and their changes are growing and suggest that gender equity may be an essential link in understanding the persistence of low fertility. As pointed out by Riley, "demographers argue that 'women's position,' or something like it, is a contributing factor to demographic change" (2006: 110). Presser (2001) explicitly contends that demographic theories should be more "gender oriented." I turn next to a review of this literature.

Gender Perspectives on Fertility - a General Review

The gender perspectives on fertility, in the most general terms, share the fact that they extend the discussion on work-family incompatibility and address the broader, normative environment of fertility behavior. The preoccupation with the normative context likely follows from the fact that it determines gender relations at the level of the society and in the family. The latter aspect is specifically emphasized by some of the most recent approaches (McDonald 2000a and 2000b, Goldscheider 2000). Scholars focusing on the institutional settings and social policies have not really addressed the aspect of gender equity in unpaid family work, which could well be an additional source of support for women willing to combine being both a worker and a mother. Women's labor force participation has been the key ingredient in most explanations of fertility. The gender perspectives tend to bring males in; that is, they focus on the behavior of women, but also emphasize the importance of the role of their partners, and refer to social norms and attitudes regarding the role of males and their contribution to unpaid work.

The theoretical foundations for the empirical studies in this area are found in part in the work of Folbre (1983, 1997), Chasnais (1996), Mason (1995), Presser (2001) and, significantly, in the work of McDonald (2000a; 2000b; 2001, 2006).

Nancy Folbre's (1983, 1997) theoretical approach to fertility decline addresses the importance of gender relations. She made an important contribution arguing that "(m)issing from both conventional economic and noneconomic explanations of fertility decline is any explicit consideration of economic inequalities between the sexes and between the generations. Yet such inequalities provide both a means of enforcing patriarchal attitudes and a means of forcing women and/or children to bear most of the costs of childrearing" (1983: 262). Because of patriarchal control over women, men are able to enforce onto women the responsibility for the costs of children. According to Folbre, the fertility decline can best be explained by the effect that the transition to capitalism had on patriarchal control over adult children. The economic benefits of having many children diminished substantially, and this decreased "resistance to women's demands for control over their own reproduction" and changed "the traditional sexual division of labor" (p. 263).

The work of Jean-Claude Chesnais (1996) has also been influential. This scholar's interest in gender issues was motivated by the fact that in the late decades of the twentieth century, Europe experienced a "geographic reversal" in stark contrast to any fertility predictions made by demographers. I have already observed that the Southern European countries, expected to have higher fertility levels resulting from their

traditional and Catholic character and strong family orientation, recorded fertility declines that population-wise put them in a disadvantaged position compared to the Scandinavian countries with their fertility rates much closer to replacement levels. Chesnais examined the differences in the fertility patterns of Italy and Sweden focusing primarily on the contrasts in the status of women in the two countries. Based on the result of his investigation, Chesnais made some interesting and inspiring theoretical conclusions describing them as "the essence of a future feminist paradox" (p. 733). “In the world at large, where women’s status is low, fertility is high. But in advanced industrial societies, and, by the same token, in societies where fertility is below replacement, this generalization no longer holds. In such societies, higher status of women, and the policies necessary to bring about such a status, may in fact become preconditions for achieving and maintaining a level of fertility that is socially desired: a fertility that suffices for replacement of successive generations” (1996: 738).

Karen Oppenheim Mason (1995) offers a critical review of the scholarly work exploring the societal relationship between gender organization and demographic behavior. Her main focus is on the methodological limitations of research conducted in the area, namely, the poor design and measures (I discuss the issue of measurement in more detail below). Many scholars make reference to the concept of the gender system employed by Mason. She defines it as “the socially-constructed expectations for male and female behavior that are found (in variable form) in every known human society. A gender system’s expectations prescribe a division of labor and responsibilities between

women and men and grant different rights and obligations to them" (p. 1-2). She attributes superiority to this concept in comparison to other terms used in research, such as women's empowerment, the status of women or gender roles, claiming that the gender system is sufficiently comprehensive to encompass "the entire complex of roles, rights, and statuses that surround being male versus female in a given society or culture" (p. 2).

A more recent work is Harriet Presser's (2001) discussion of gender and low fertility in advanced countries. Her approach emphasizes women's increased control over the timing of different events in their lives, such as births, but also, uninterrupted education and economic activities. Even more importantly, it draws attention to the significance of a "greater sense of entitlement to leisure time this generates for women" (p. 177). Presser argues that women start to resemble men in the extent to which they feel entitled to child-free time that they can devote to activities such as travel or social and cultural life. Therefore "(f)uture fertility studies of postindustrialized countries should include measures relating to entitlement to time of one's own, both for women and men, and examine class differences within societies. This should provide a better understanding of how gender and family systems relate to the process of fertility behavior" (p. 182).

Peter McDonald's Theory of Gender Equity

Peter McDonald has developed a "generalized theory of gender equity in fertility transition" (2000b: 427). I use this theory as the major theoretical underpinning of the empirical analyses I will conduct in my dissertation. McDonald's recent work (2000a,

2000b, 2001, and 2006) builds upon and expands previous academic contributions and is widely referenced in the empirical investigations of the impact of gender on demographic behavior; this relationship, by the way, experiences some significant growth in the 2000s, but still today remains rather limited and not without some weaknesses.

McDonald comments on the restricted robustness of theoretical generalizations accounting for the circumstances which accompanied the onset of the fertility transition; he claims that more valuable general statements can be made about the conditions under which we observe a sustained fall of fertility to lowest-low levels. He also suggests that changes in gender equity may be most relevant to this particular stage of fertility transition. Nevertheless, he provides a perspective on the role of gender equity in the transition from high to replacement-level fertility. He argues that for fertility to fall from high levels, more gender equity is needed within families so that women are allowed to fulfill their fertility desires. When women are provided more control over their own reproductive behavior, fertility can decline despite a high degree of gender inequity in institutions outside the family. But once fertility decreases, women will demand more gender equity also in those spheres. In contemporary industrialized countries, this leads to gender equity changes occurring outside the family at a much faster pace than those in the family, where except for women's control over the number of children they have, other forms of equity are usually nonexistent. Low fertility levels are the consequence of these gender equity dynamics.

The institutional model of the family is a key concept in McDonald's framework. He notes that until the 1970s, in advanced countries the male breadwinner model of the family was practically universal. Presumed natural differences between men and women were used as a justification for men performing the role of the family provider and women being the family caregiver. As noted by McDonald, in the past three or four decades, there have been shifts in advanced societies from a male-breadwinner to a more gender-equity family arrangement in which gender does not predetermine the kind of work men and women do for the family. None of the family functions, i.e. income earning, and house maintenance and care, are rigidly ascribed either to males or to females. As observed by McDonald, this shift was associated with the 1960s and 1970s movement toward increased individual freedoms. One of the outcomes was women's greater movement into education and employment.

McDonald observes that social institutions can deal with or identify women either as individuals or as members of families, i.e., as mothers and caregivers. On this basis, he differentiates between individual-oriented and family-oriented institutions. In the past, since the male-breadwinner model was assumed to be universal, there was a coherence among institutions which recognized individuals through their socially prescribed family roles. For instance, the education system was designed to provide men with the human capital necessary to become successful breadwinners, and jobs and wages for the heads of families were the social priority.

Women's entrance into paid work brought changes in the family model which is starting to be closer to the gender equal arrangement. These changes have been partially recognized at the level of assumptions made by social and economic institutions about the general family model, although the pace of this process has been uneven. As a consequence, McDonald comments on the relatively high levels of gender equity in individual-oriented institutions. "(I)n the institutions of education and market employment, considerable gender equity was afforded to women as individuals" (2006: 492). However, lower levels of equity tend to be observed for family and parenthood-oriented institutions - income transfer systems, family support services, employment relations and the family itself, as they remain founded on the assumption of the male breadwinner model. These continue to target women as caregivers with family responsibilities. What we currently observe in low-fertility countries is that "(i) nstitutions which deal with women as individuals are more advanced in terms of gender equity than institutions which deal with women as mothers and members of families" (McDonald, 2000a: 10). McDonald evaluates this situation and proposes in his theory that "it is these gaps or the extent of incoherence between social institutions in regard to the presumed model of family that leads to very low fertility" (McDonald, 2000a: 4).

To rephrase his argument, we could say that women's educational opportunities have improved substantially and that their market employment has grown, but that these shifts have not been accompanied by other necessary changes in the society, both at the

macro and family level. As a result, single and childless women enjoy significant gender equity and are pretty much able to fulfill their educational and paid work aspirations; but they are aware that these achievements can be undermined once they start having children. Therefore, in countries where patriarchal norms prevail, women will tend to have fewer children, whereas in societies with higher overall levels of gender equity, replacement-level fertility is more likely since, thanks to the more gender-equal institutions, the costs of having children are spread more equally between the family and the community and men and women.

It is worth noting here that McDonald's arguments about the levels of incoherence between social institutions resemble Hochschild's (1995; Hochschild and Machung 1989) observations about the family dynamics and gender relations. "The exodus of women into the economy has not been accompanied by a cultural understanding of marriage and work that would make this transition smooth. The workforce has changed. Women have changed. But most workplaces have remained inflexible in the face of the family demands of their workers and at home, most men have yet to really adapted to the changes in women. This strain between the change in women and the absence of change in much else leads me to speak of a "stalled revolution" (Hochschild and Machung, 1989: 127).

McDonald's theory posits that in advanced industrialized societies higher levels of gender equity in the family encourage women to have more children. It is therefore worth mentioning two significant perspectives discussing the optimal role arrangements

in the family. Becker (1985) argues that there are great gains in marriage from the division of labor which results from higher returns from specialized human capital. Therefore, the optimal division of labor is not the gender-equal one, but, rather, one in which the members invest their time in non-overlapping activities. Furthermore, Becker argues that even if the traditional roles of men and women were weakened enough to be reversed, specialization would still be beneficial. Oppenheimer (1994, 1997) challenges the specialization model as not being adaptive to post-industrial reality in which employment is highly uncertain. In fact, she argues that such a model jeopardizes the well-being of individuals and families. Specialization means that if a family looses one person performing its vital function, its survival it threatened. Oppenheimer notes that the collaborative model, i.e., one based on equity in which gender roles overlap, benefits the family most in the new economic context.

An important point to make about McDonald's argument pertains to the family-oriented institutions, namely, the industrial relations, support services and government transfers for families with children. According to him, these "social institutions, either explicitly or implicitly, are modeled upon assumptions about the nature of family organization in the society" (2000b: 7). The ones founded upon the male breadwinner family model discourage advancements in gender equity. Comparing monetary transfers and services, it is the extent of availability of care options which is a good indicator of whether gender equity is fostered in a country. "In social systems that have not moved fully to gender equity (the situation in all societies), expenditure on services usually

provides greater benefits to women then to men, because women are more likely to be substitute providers of family services if these services are not provided by the state or by the market. Thus, expenditure on tax transfers is consistent with the male breadwinner model of the family while expenditure on services is consistent with the gender equity model. Obviously, among all family services, provision of child care is highly beneficial to the employment of women and hence to a higher level of gender equity" (McDonald, 2000b: 8).

Regarding industrial relations, any flexibility in working conditions is favorable to gender equity in the family. However, when it comes to leave schemes, they can actually promote inequities between males and females by reinforcing mothers' responsibility for domestic work if the leave is available only to women, or if men are not encouraged to take leaves, if the leave is too long, or if the leave benefits are relatively low.

Uniqueness of the Gender Perspectives

To conclude, I would like to once again emphasize what is particularly unique about McDonald's argument, as well as some of the other gender perspectives on fertility I have just reviewed. Changes in the role of women and their increased labor force participation are not considered to inevitably lead to low fertility. Equally important is the consideration of the male role and the extent to which it has changed. Or in other words, in regard to fertility, the issue of family roles of both men and women is of greater significance than the general position of women alone (Goldscheider, Oláh, and

Puur 2010). This might be the key factor in understanding the unforeseen fertility shifts across developed countries. McDonald's theory puts a particular emphasis on men's contribution to childrearing and housework and how the organization of these tasks has an impact on the degree of incompatibility between being a worker and mother. The important implication of this reasoning is that gender equity at home affects fertility, with more gender equity in work organization being favorable to having more children.

Effects of Gender Equity - Methodological Challenges

Before discussing the empirical studies supporting McDonald's gender equity theory of fertility, I would like to briefly comment on the methodological challenges faced by researchers examining the impact of gender on fertility. Mason (1995) very explicitly emphasizes the shortcomings of conventional demographic studies using such measures of women's "status" as education, employment, occupation and other variables because these are just proxies with low validity for gender roles and gender stratification. Along similar lines, Presser argues for measures extending beyond women's status that could allow scholars to "better analyze and incorporate the multidimensional and multi-level nature of gender systems in research so that (they) can relate them to family systems and demographic processes, and thus better understand the complex relationships" (Presser 2001: 177). These discussions suggest that more sophisticated measures of gender are needed in fertility research (Mason 1995; McDonald 2000a; Presser 2001).

McDonald explicitly addresses this issue. He states that gender equity should be "evaluated for each social institution on the basis of the assessments of women and, perhaps, men in the society under study" (McDonald 2000b: 429). He admits, however, that this recommended way of measurement is associated with certain difficulties; specifically, measures constructed this way would be hard to obtain for historical studies. But even in contemporary societies, gender equity continues to be defined mostly in the "rarefied language of sociology" (2000a: 428), and therefore measures based on perceptions of individual women might be problematic.

I now provide an overview of the empirical literature offering some support for McDonald's theory, which is then followed by a discussion of the voids in the literature that I intend to address with my dissertation research.

Country-level Evidence

Macro-level evidence is used by McDonald. In advanced societies which do not have very low fertility, e.g. the Nordic countries or the English-speaking countries, the shift of institutions towards the gender equity model of the family has proceeded faster and has been more even. These societies tend to experience higher gender equity within the family. Also, more family support services and family-friendly working conditions seem to be available to meet the needs of the dual-earner couples. Variation in the family-oriented institutions, i.e., the welfare state provisions and services provided by the market enabling institutionalization of child care, is found to be associated with fertility in other studies as well. To name just a few examples, Castles (2003) analyzed

data for the late 1990s for 21 OECD countries on a wide range of family-friendly policies. He used measures accounting for workplace flexibility and child care availability as well as a composite index capturing the whole package of policies. Castles concluded that "(t)he extremely strong positive relationship between fertility and formal child-care provision, and the somewhat lesser one with flexi-time, constitute strong evidence that cross-national differences in policy environment have an important impact on the cross-national incidence of fertility" (2003: 222-224). Sleebos (2003) reviewed a number of multivariate studies dealing with the variation in fertility levels and institutional and policy setting across OECD countries. She admits that some of the findings are contradictory but eventually judges that "most studies seem to suggest a weak positive relation between reproductive behavior and a variety of cash benefits and tax policies" and that there are "strong positive effects on fertility from higher childcare availability but weaker or mixed effects from maternity and parental leave" (2003: 5). Aggregate-level studies that analyze the impact of the distribution of tasks between men and women are rare. Alonso (2004) used the Eurobarometer surveys of the 2000s to investigate whether there was an association between low fertility and the sharing of family responsibilities. His preliminary analysis indicates that there was a significant correlation between the actual distribution of housework tasks and fertility in the 15 EU old member-states, but that the correlation with how childcare tasks are shared was not significant.

Individual-level Evidence - Gender Equity in the Family-oriented Institutions

Further support for McDonald's theoretical paradigm is provided by individual-level studies. In reference to the family-oriented institutions, we have seen that child care availability is emphasized by McDonald as promoting the highest levels of gender equity. In this context a few studies may be mentioned. Presser and Baldwin (1980) carried out a study using 1977 data for the United States; their results suggest that expected fertility was lower among mothers who did not perceive satisfactory child care to be available. Del Boca (2002) found that the availability of child care had a marginally significant and positive effect on the childbearing of Italian women. A study using data for Norwegian women born between 1957 to 1962 also suggests a strong positive effect of accessibility to family support services on transition to motherhood (Rindfuss, Guilkey,Morgan, Kravdal, and Guzzo 2007). These are just a few of the numerous studies that have explored the relation between fertility and one or more of the important family-related institutions.

Individual-level Evidence - Gender Equity in the Family

Individual-level research examining the effect on fertility of the organization of tasks at home is much more recent and limited. Scholars have examined the impact of men's participation in domestic work (Buber-Ennser 2003; Cooke 2004; Craig and Siminski 2010; Oláh 2003; Mills, Mencarini, Tanturri, and Begall 2008; Tazi-Preve, Bichlbauer, and Goujon 2004; Torr and Short 2004), men's involvement in child care duties (Brodmann, Esping-Andersen, and Guell 2007; Buber-Ennser 2003; Cooke 2004

and 2008; Craig and Siminski 2010; Pinnelli and Fiori 2008), and men's use of parental leave (Duvander and Andersson 2006; Oláh 2003) (for studies examining the impact of gender role ideologies and fertility see for example, Kaufman 2000; Philipov 2008; Puur, Oláh, Tazi-Preve, and Dorbritz 2008; Scanzoni 1976; Westoff and Higins 2009; White and Kim 1987).

Oláh's study (2003) of birth histories in Hungary and Sweden between the 1960s and 1990s suggests that Hungarian men's greater participation in domestic tasks tended to increase the chances of second births, but also that the intensity of second-births was equally high when women were exclusively responsible for family work. In the case of Swedish couples, women (not men) had significantly greater odds of a second birth if the father took parental leave with their first child. Buber-Ennser (2003) analyzed the desire to have a second child among Austrian women and found that sharing childcare duties significantly increased the likelihood of such plans, whereas the division of household tasks did not. Tazi-Preve and colleagues (2004) analyzed the desires of Austrian men and women to have (further) children. They found that an egalitarian partnership with regard to the distribution of household tasks tended to increase the wish to have a (another) child among men, but not among women. Torr's and Short's analysis (2004) indicates that in the United States "modern" and "traditional" couples in regard to the wife's relative share of housework hours were more likely to have a second child. Cooke (2004) examined the impact of gender equity on the fertility of German couples and found that the odds of second births increased with fathers' greater relative childcare

involvement. However, the husbands' relative share of housework was not found to be significant. Duvander's and Andersson's results (2006) corroborate the findings of Oláh. Their analysis suggests that the father's use of parental leave, but not the mother's use, had a positive impact on the likelihood of second and third births. Brodman and associates (2007) examined whether greater gender equity in child care affected women's likelihood of a second birth in Denmark and Spain. They found that the Danish welfare state support seemed to make a difference; women in Denmark were more likely to have a second child than were women in Spain. Additionally, the Danish fathers' childcare time tended to offset the negative impact of their partners' professional training. Cooke (2008) found that in Italy, the likelihood of birth increased with greater fathers' childcare share, especially among employed women. But this predictor was not significant for Spain. The effect found by Cooke for Italy is consistent with the findings of Pinnelli and Fiori (2008). Their study suggests that the positive impact of the fathers' participation in childcare and domestic activities was significant for second-birth intentions of working women. However, in the case of non-working women, it had no decisive influence on the intentions to have a third child. The study of Mills and colleagues (2008) explored whether an unequal division of domestic tasks decreased women's fertility intentions and whether this effect was different depending on the institutional context; that is, they focused on the association in Italy, a country of low gender equity, and in the Netherlands, a country with moderate to high gender equity. The authors found that the impact of unequal division of household labor on fertility

aspirations was only significant for working women or for women who had children. Also, the impact was greater for employed Italian women. Finally, Craig and Siminski (2010) investigated the impact of gender equity in the family on second births. They found that women's total amount of domestic work was a significant predictor of the likelihood of having more than one child, but the ways in which housework and childcare were shared by the partners were not.

As my above review indicates, some of the results of individual-level studies indicate that the proposition about gender equity in the family may be ambiguous. As pointed out by Cooke (2008) and by Neyer and Rieck (2009), the findings could be summarized to indicate that, in general, gender equity in the division of unpaid work is positively associated with childbearing. However, these effects are unequivocal only in the case of societies encouraging greater equity in all spheres; the effects are found to be more ambivalent, i.e., positive, negative or insignificant, in countries that are less committed to promoting gender equity. Therefore, while the effect of family gender equity is not obvious and definite, it is certainly plays an important role in understanding current and projected fertility in the 21st century in the low fertility countries.

I now discuss a few conclusions regarding the literature I have just reviewed that provides a theoretical focus for my dissertation.

Extending the Empirical Focus - Central and Eastern Europe

As I have shown, research so far has focused almost exclusively on countries of Western Europe, namely, Austria, Denmark, Germany, Italy, the Netherlands, Norway,

Spain and Sweden. There are no studies of which I am aware focusing on any of the post-communist countries. The only exception is the study of Olah (2003) on Hungary, but her analysis concerns only the pre-transition period, i.e. births that occurred in Hungary before the transition, that is births between 1960 and 1990; so her study is not really an exception to my above statement.

Neyer and Rieck (2009) provide a preliminary analysis on whether gender equality matters for fertility in Russia and Bulgaria in the 2000s. However, the authors look at the impact of full-time employment, the maintenance of financial resources and the availability of child care on parenthood intentions, but they do not investigate the significance of the division of unpaid housework. There is therefore a need to extend the analyses to some countries in Eastern and Central Europe to test the robustness of the theory about the impact of gender equity on fertility. As I have already mentioned, this is particularly important in light of the unusual history of gender relations in the countries of Eastern and Central Europe.

Relative Importance of Gender Equity at the Societal and Family Levels

There is a second important matter that has not been sufficiently addressed in this area of research. While according to McDonald's theory the levels of gender equity in the society as a whole, i.e., in the family-oriented institutions, and in the family, i.e., in the relations between partners both matter, these effects have only seldom been tested simultaneously at the individual level. This is usually a consequence of the lack of suitable measures. Therefore, many studies have examined the impact of gender equity

at home and have investigated whether these effects are different across countries. But the issue has been explicitly addressed only in two studies. Tazi-preve and associates (2004) conducted a study of a sample of Austrian men and women and investigated the impact of the distribution of household tasks (egalitarian versus conventional) and the contentment with how these duties are shared, while controlling at the same time for the individuals' perceptions regarding political promotion of equal opportunities for women in the society and family. Studying childbearing histories among Swedish and Hungarian males and females, Olah (2003) also included a variable capturing "major changes in the parental-leave program as well as to the availability of high-quality, subsidized public childcare", i.e., the crucial family-policy programs, which help both parents combine professional activities and parenting. These two studies allow for the investigation of the relative importance of gender equity levels in the family-related institutions and in the family in relation to fertility; they suggest that the effect of the latter is more significant. In light of the difficulties with data availability, the solution available for a simultaneous examination of gender equity in different spheres is to include measures based on individuals' perceptions and evaluations of suitable policies and institutions, i.e., the efficiency of the state's support for families with children and the consequences for women and men taking advantage of such provisions as leaves.

Bringing Males In

The third limitation of the literature mirrors the deficiency of fertility research in general, i.e., that the majority of studies conducted so far have focused on women or

couples, while men have been mostly excluded (for exceptions see Olah 2003; Tazi-Preve et al. 2004).

In the fertility literature there is only very limited empirical evidence concerning men. Few studies have examined the socio-economic and demographic factors influencing male fertility and made straightforward comparisons between men and women in terms of their fertility. The reason for this neglect of men in studies of fertility have been discussed in the literature (see e.g. Keyfitz 1977; Poston and Chang 2005; Poston, Baumle, and Micklin, 2006). Historically, demographic studies of fertility have tended to focus almost exclusively on the birth dynamics of women primarily because of the social construction of the male gender role, according to which men are practically not involved in fertility. Furthermore it was due to the poor quality of male fertility data or simply the biological fact that births are more tractable to mothers than to fathers. Luckily, despite these factors, there has been a growth in the studies of male fertility. This is very desirable because including men in the fertility research can result in a better understanding of the individual fertility behavior and macro-level fertility trends. Focusing on men can be especially important in the context of the substantial demographic changes in some countries of the world, such as the former communist countries. Because men continue to differ to some extent from women in their educational attainment, their economic activity, and family obligations, the political, economic and social changes can affect their fertility behavior differently; thus it is important to understand these dynamics.

As has already been mentioned, gendered studies of fertility are not exempt from empirical ambiguities; indeed it is practically unknown whether gender equity impacts differently, in either direction or magnitude, the fertility of men and women. While even with regard to women, there are contrasting theoretical arguments whether higher levels of gender equity increase women's fertility, the inconsistencies tend to be greater with regard to men.

As I have already observed, McDonald has argued that women in partnerships characterized by a more equal division of labor tend to be more likely to have children in a situation when institutions in the society favor their education and employment. This positive association is explained by the fact that the workload of women is reduced by the engagement of men, and this reduces the stress on women. However, an inverse association has also been implied by other studies. Women, who are in more gender equal partnerships, are thought to be, in general, less willing to commit themselves to childcare responsibilities (Becker 1981; Goldscheider and Goldscheider 1992).

The debated question is whether gender equity in the family increases or decreases male fertility. On the one hand it is argued that men who are less involved in family work and have wives committed to child caring, bear lower costs of having children and may thus have higher fertility intentions (Becker 1981), while the opportunity costs of children are higher for men in families which are more gender equal (Westoff and Higgins 2009). On the other hand, men who are more committed to housework responsibilities might see family life as more important, seek ways to be

more involved, may be more family-oriented, and thus may have higher fertility intentions (Goldscheider and Goldscheider 1992; Puur et al. 2008).

As indicated above, there are contrasting theoretical arguments about the association between gender equity and male fertility. The limited empirical studies are also rather inconclusive. The majority of evidence comes from studies in which gender equity has not been directly tested, but rather, gender role attitudes have been used to construct the measures; clearly, these are qualitatively different from actual behavior. Nevertheless, because in regard to men, this area is so empirically under-researched, I discuss some of the studies based on gender role attitudes.

Scanzoni (1976) investigated the extent to which the gender role norms held jointly by couples predict birth intentions and desires. His results suggest that "the more egalitarian the couples are, the fewer children they intend to have" (1976: 683) and the same holds for births desired. Both men and women in White and Kim's study were found to be more likely to have a child if they had a traditional sex-role orientation (1987). However, Kaufman (2000), established that while there is a smaller likelihood that women with egalitarian attitudes intend or actually have a child, men with such role attitudes are more likely to intend to have a child. The difference in the impact of gender role attitudes on intended fertility between the sexes was significant. In his study of the effects of gender ideology on the intentions to become a parent, Philipov (2008) found some variation in the key association among different countries. In some countries men with more traditional gender role attitudes are more likely to have children. However, in

the case of Austria and West Germany, Philipov found that more egalitarian perceptions of gender roles have a positive impact on fertility. In a different study using the same data (namely the Population Policy Acceptance Study (PPAS)) Puur and associates (2008) reached substantially different conclusions. Their analyses indicate that, when controlling for the conventional demographic and socio-economic factors, egalitarian attitudes among men pertaining to the role of men and fatherhood are significantly associated with higher fertility intentions in five of the eight countries under study, while in the remaining three the effect was not significant, but was marginally positive. The divergence in the findings in regard to traditional and egalitarian men is further intensified by the study of Westoff and Higgins (2009), which was conducted in direct response to the findings of Puurr and colleagues. The scholars focused on childbearing behavior and concluded that while "fertility is higher at the egalitarian end of the scale (as shown by Puur and associates), for every country without exception, we found an opposite relationship" (Westoff and Higgins 2009:68), i.e., that egalitarian attitudes of men had a significant negative effect on the number of children ever born in the majority of the countries studied, while in the remaining share of the countries the relationship was not significant but negative in all cases. Finally, in a very recent 2011 study, directly in response to the contradictory findings of Puur and associates and Westoff and Higgins, Miettinen, Basten, and Rotkirch focused their research on Finland and established that indeed men with egalitarian role perceptions were more likely to become

fathers compared to intermediate men; but, at the same time, men with more traditional attitudes also had significantly higher fertility intentions.

The brief review of the literature pertaining to men reveals the extent of the empirical ambiguities. However, there are at least three important issues that need to be discussed in regard to the inconclusive evidence presented above. Firstly, the studies are based on different fertility measures, namely intended fertility and achieved fertility. I consider this issue in greater detail in Chapter III, when discussing the dependent variables to be used in my models. The second important aspect of the ambiguities is particularly relevant to the research developed in this dissertation. It is carefully reviewed by Goldscheider, Oláh, and Puur (2010) in a comment meant to reconcile the studies of men's gender attitudes and fertility by Puur and associates (2008) and by Westoff and Higgins (2009). Goldscheider and colleagues point out that the two analyses focus on different aspects of gender equity. Puur and colleagues (and similarly Kaufman 2000) model the effects of gender equity in the domestic sphere, and more specifically construct their measure on statements related to men as fathers and family members and emphasize that these are associated with their preferences regarding children. Westoff and Higgins (and similarly Philipov 2008), on the other hand, construct their measure differently and focus on attitudes about gender equity in the public sphere and thus do not account for perceptions of male gender roles in the family. Based on these differences and the findings of the two research teams, it is expected that the results of

the models pertaining to men and focusing on the division of work in the family will be more consistent with the conclusions of Puur and colleagues.

However, all of the studies reviewed above are based on gender role ideologies or attitudes rather than on actual gender role behavior; this is the final issue that needs to be discussed. These are qualitatively different studies. For instance, while women with egalitarian role perceptions may wish to be equally focused on their professional and family life, the factor that most matters to their fertility might be the extent to which they are able to share the responsibility for the domestic duties with their partners.

So far, only two studies, in which gender equity related to the family was measured with actual gender role behavior, have focused on men. In Olah's study (2003) concerning Swedish and Hungarian men, it was found that gender equity in the family-oriented institutions, measured as favorable changes in parental leave schemes and availability of subsidized public child care, significantly increased second-birth intensity of men in Sweden. Also those who took parental leave after the first birth were more likely to transition to second births, although not significantly so. In Hungary, there was a negative association between the traditional organization of work at home and men's transition to second births, although again it was not significant. What needs to be remembered, however, in the case of this particular study is that it was based on historical data regarding the period before the political and economic transformation of the communist states. In a 2004 study focusing on Austrian men and using more recent data, i.e., for the 2000s period, Tazi-Preve and associates (2004) found a positive

association between the egalitarian distribution of household tasks and male fertility intentions.

Different Operationalizations of the Gender Equity in the Family Variable

Finally, while I have already discussed the problems associated with the shortcoming of the conventional demographic studies using measures that do not accurately capture gender equity, another issue involves these more sophisticated measures. Because there is some variation in how the independent variable is constructed, the effect of gender equity might differ depending on its operationalization and on the control variables that are used. In the research studies reviewed above, the measures used to represent the level of gender equity in the family in the division of household work vary considerably. The effect of gender equity on fertility has been tested by looking at the impact of the wive's relative share of housework hours, women's hours of housework, father's dedication to child care (self-reported weekly hours), or husband's share of housework and childcare. These have been operationalized as interval variables (e.g. hours) or as categorical variables, i.e., as indicating a traditional, egalitarian and transitional or intermediate family model. Another approach involves using the information on father's and mother's use of parental leave, which, however, seems less related to the actual division of household work although it is definitely an indication of a gender role orientation and perception about gender equity at the societal level. Finally, a considerably different strategy is based on focusing on contentment with the distribution of household tasks, and perceived fairness of household work

distribution. This seem to be reflecting the gender equity arrangement as defined by McDonald. “The gender equity model does not imply exact equality between the man and the woman in any heterosexual couple, rather that specific roles are not determined on the basis of gender” (McDonald 2000b: 3). This definition implies to some extent that it is desirable to conduct empirical tests of McDonald’s theory using measures based on women’s assessments of whether their partners’ share of housework and childcare are sufficient, whether the arrangements meet the needs and expectations of both partners, or whether they are evaluated as fair.

For the reason discussed above, it is desirable to pay attention to the operationalization of this independent variable. Although this issue is not easy to address in a full and sufficient manner, in this dissertation I will make an attempt to draw attention to this matter by comparing the results of models in which the measures of gender equity in the family are based on a less and more stringent definition of a gender equal division of domestic labor.

Conclusion

In this chapter I have reviewed the theoretical and empirical literature focusing primarily on gender issues and fertility. I have also emphasized what I believe to be some important voids in the literature. The specific issues that I will address in my dissertation will extend research in this area by testing the implications of McDonald’s theory in regard to low fertility in Poland and Estonia, examining the relative impact of the extent of gender equity at the societal and family levels, explicitly bringing men into

this area of research, and finally comparing the results of models using measures based on less and more stringent definitions of gender equity in the family. In the next chapter, I describe my data for Poland and Estonia, the operationalization of my dependent and independent variables as well as my hypotheses, and I conclude with the description of the methods used as well as some other important and relevant methodological issues.

CHAPTER III

DATA AND METHODS

In this chapter I describe and discuss the data and methods that are employed to estimate the models testing the impact of gender equity on fertility among men and women in Poland and Estonia in the early 2000s. I first discuss the context and purposes of the development of the International Population Policy Acceptance Survey dataset, the source from which the data are extracted, and review the design of the study and some other important aspects of the data collection process. I then provide an overview of the models I use to test the hypotheses regarding the impact of gender equity on fertility. Following this, I describe my dependent, independent and independent control variables, as well as my hypotheses. I conclude by discussing the three types of regression equations that are employed to address my research questions, namely, the logistic regression model for my dichotomous dependent variable, the Poisson regression model for my count dependent variable, and the ordered logistic regression model for my categorical and ordinal dependent variable. I review the issue of model diagnostics and discuss the statistical approaches for comparing the effects of gender equity between males and females as well as testing the differences between constructing the independent variable based on less and more stringent definitions of gender equity in the family.

Data

For the purpose of this dissertation research, I extract data for Poland and for Estonia from Wave 2 of the Population Policy Acceptance Survey (PPAS). This is a research instrument used in the DIALOG Project (full title "POPULATION POLICY ACCEPTANCE STUDY – The Viewpoint of Citizens and Policy Actors Regarding the Management of Population-related Change") to capture the viewpoints of European citizens on demographic changes and behaviors, and on policies addressing population issues.

PPAS started with Wave 1 in 1990. It was planned as an international collaborative project involving the implementation of Population-related Policy Acceptance and Attitude Surveys. The publication in 1998 of Volume 2 of the *POPULATION, WELFARE AND FAMILY, A Comparative Survey of European Attitudes* (Palomba and Moors 1999) concluded Wave 1 of PPAS. In the late 1990s, members of the PAAS group met for an informal meeting during the 1999 European Population Conference and decided that it was worthwhile to build on the good experiences of the first Wave of the study and to conduct a second Wave.

The main goals of the project are defined on the PPAS-DIALOG web site maintained by the Federal Institute for Population Research at http://www.bib-demografie.de as follows: "The background idea of the PPA is that most European countries are experiencing similar demographic trends and prospects regarding fertility, nuptiality, living arrangements, population ageing, foreigners and migration. Population

changes are taking place which require increasing attention by policy-makers." Therefore numerous questions arise about the extent to which population policy might effectively counteract the negative results of these population processes. These projects are important because, "(w)hether these policies have a desirable impact on the behavior and well-being of the population may depend largely on values and attitudes of individuals as ultimate beneficiaries of policy measures."

Wave 2 of PPAS is a cross-sectional study conducted between 2000 and 2003 on nationally representative samples of males and females in the following 14 European countries: Belgium (Flanders), the Czech Republic, Germany, Estonia, Italy, Cyprus, Lithuania, Hungary, the Netherlands, Austria, Poland, Romania, Slovenia and Finland. Eventually, a common database (IPPAS) was developed, which is a file containing data items on 336 basic variables from the PPAS core questionnaire and some other basic variables, for more than 35,000 women and men. "The main domains covered by the survey can be grouped into six broad themes: (1) general population trends and population-related policies; (2) family forms and gender relations; (3) fertility, children and parenthood; (4) work and family life; (5) ageing and intergenerational relations; and (6) needs for changing population- and family-related policies" (Avramov and Cliquet 2008: 21-22). These domains make this database very suitable for my analyses.

Although the major advantage of the IPPAS is its potential use in comparative studies of the 14 countries, there are some problems that make it impossible to generate the exact same set of gender equity measures for Poland and for Estonia. First of all, the

database includes variables from the core questionnaire and variables specific to individual countries, which were based on particular questions added by each country to the core questionnaire to address the particular research needs of institutions responsible for conducting the survey. Additionally, some complete question(s) were not asked in some countries and, moreover, some sub-items were removed. Therefore, in my research I am not able to make direct comparisons of the effects of the same gender equity measure across the two countries.

I now discuss in some detail PPAS's sample design and the process of data collection and processing for Poland and for Estonia based on the information from the Manual of the International Population Policy Acceptance Survey (Avramov and Cliquet 2007).

In Estonia, the Estonian Interuniversity Population Research Centre (EKDK) based in Tallinn was responsible for collecting the data, controlling the completed questionnaires, as well as processing the data and preparing the national SPSS file integrated into the international database (IPPAS). In Poland, fieldwork and the control of the completed questionnaires were performed and maintained by the Central Statistical Office, while the remaining two stages were the responsibility of the study's Polish partner institution, namely the Warsaw School of Economics – Institute of Statistics and Demography (ISD).

The sampling frame for the Estonian study was based on the population census, a direct sampling structure was used, and "region" was chosen as the stratification

criterion. Additionally, an individual person was the sampling unit in the process of data collection. In Poland, the population register was used as the sampling frame, a multistage sampling structure was employed, and more than one criterion was used for stratifying the sample, namely, region, voivodships, and urban/rural regions. Compared to Estonia, dwellings were the sampling units and respondents were selected from them.

Fieldwork lasted 6 months in Estonia and only half a month in Poland. The Polish survey was implemented as face-to-face interviews or in the form of a self-completion survey, while in Estonia it was conducted by means of a mail survey. The respondents were initially contacted about the survey through a letter in Estonia, whereas direct contact was made in Poland.

Quality control of the data was performed both in Poland and Estonia. In the former, official statistics were used as an external source for validation and sex, age, educational level, and place of residence were used as variables for this purpose. In Estonia on the other hand, the population census was used for the purpose of data validation and the two validating variables were sex and age.

In the study, 1,500 respondents, both men and women combined, was set as a minimum for each country, and people within the age range between 20 and 60 were to be interviewed. In Poland the sample size exceeded significantly the minimum, so that eventually 4,504 persons participated in the study (see Table 2). In Estonia, the sample size was considerably smaller, namely 1,681 persons, although the age range was larger;

17-79 vs. 18-65 in Poland. The overall response rate of 86% in Poland was higher than the 73% response rate in Estonia, but in both cases the rates were relatively high.

In order to examine the effects of gender equity in a low fertility context, in both countries I restrict my samples to individuals in their childbearing years, i.e., men and women 44 or younger, of Polish or Estonian nationality, with at least one child but no more than 3 children, not pregnant or with a pregnant partner at the time of the interview, and living with their spouse or partner.

While the above restriction criteria are fairly self-explanatory, I exclude childless respondents and limit my sample to men and women who have at least one child for a number of substantive reasons, which I now briefly discuss. The major issue is related to the fact that the transition to mother- and fatherhood tends to change the dynamics of the division of domestic responsibilities because children not only demand care but also generate additional work such as cooking, cleaning and laundry (see e.g. Craig 2007). The literature suggests that after the birth of the first child, women's contribution to housework increases, while men's housework time decreases. Therefore the transition to parenthood tends to reverse the division of work towards the more traditional model compared to the pre-birth arrangement (Craig and Mullan 2010; Kühhirt 2011). For this reason it seems desirable to focus on the effect of gender equity in the family on fertility intentions concerning births beyond the first child.

It should also be considered that the perceptions of gender equity in different institutions, and the family-oriented ones in particular, might be different for childless

persons and parents. For those who have not yet taken advantage of the family-friendly policies, the evaluations are based on purely theoretical considerations and indirect experience. Therefore it seems more appropriate to concentrate the analyses exclusively on parents.

The above reasoning is supported in the literature. Moreover, similar implications can be found in the results of some very crude and elementary analyses of the PPAS data. These suggest that childlessness is a significant predictor of more gender equity in the family and tends to have a positive impact on the perceptions about gender equity in the family-oriented institutions. Controlling for age, education, and employment status of both partners, I have found that the partnerships of the childless respondents are significantly more gender equal (as defined by the gender equity variables discussed in the section below devoted to my independent variables) for Polish men and women, as well as for Estonian men. Additionally, Polish women and Estonian men with no children perceive significantly more gender equity in the family-oriented institutions, controlling for their age, educational attainment, and the employment status of theirs and their partners.

Taking into account the above parameters restricting the focus of my analyses, the working samples for each country become significantly smaller. The subsample for Poland is reduced to 1,098, and this number includes observations with missing data. The corresponding figure for Estonia is only 291.

Missing data are an important consideration, which needs to be addressed. In the majority of secondary datasets researchers encounter this problem, namely, that for some observations they lack information on particular variables. Different approaches for handling the problem of missing data have been receiving particular attention and rightfully so because with the use of traditional methods, one runs the risk of arriving at biased and inefficient estimates (Acock 2006; Treiman 2009). There has thus been increased interest in the recently developed methods of multiple imputation and maximum likelihood. While in general I would be in favor of the more methodologically advanced methods for dealing with missing data, in the case of the Polish and Estonian samples there is really no such need because the shares of observations for which information is missing on particular variables used in the models are fairly small and do not exceed 15% of all cases. More specifically, data are missing for only a few cases, namely, 4% for Polish women and men, 7% for Estonian women, and 6% for Estonian men (see Table 2). Therefore the simple method of listwise deletion is employed in all the models as it seems like a justified and conservative approach.

Table 2 Basic Information about the IPPAS Samples for Poland and Estonia

Country		Poland	Estonia
Survey Year		2001	2003
Age range		18-65	17-79
Sample size	**women**	2,403	1,002
	men	2,101	979
	total:	4,504	1,681
Response rate		86%	73%
Proper subsample	**with missing data**	women: 620	women: 177
		men: 478	men: 114
	w/o missing data	women: 597	women: 165
		men: 458	men: 109

Source: Avramov and Cliquet 2007 and personal calculations.

For both the Polish and Estonian surveys internal weighting was applied for the purpose of making the samples representative to certain socio-demographic variables. The Estonian sample was internally weighted on age, while the Polish sample was internally weighted on place of residence. There are two weighting variables included in the international dataset; an internal weight (IWEIGHT) and a pooled weight (PWEIGHT). In my analyses I use the proper commands accounting for the survey design of the data and the former weights, which were provided by each country and should be used for analyses per country. The internal weight is a proportional weight so that if persons sharing certain characteristics are over- or under-sampled, then each such person has a weight value of below one or above one making it possible to generalize the

results to the entire population (Acock 2006). This concludes my discussion of the data. I now describe the particular statistical models that I estimate in this dissertation to address my research questions.

Models

The main goal of my research involves analyses testing the impact of gender equity, primarily in unpaid household work, on fertility. For this purpose I estimate two separate fertility models for each country to specifically test the general hypothesis about the positive association between gender equity and fertility. In each of the models a different dependent variable measuring fertility is used, as follows: 1) a measure of whether or not the respondent intends to have another child, i.e., intends a second or higher order birth; 2) a count variable of the number of additional children intended (for the study of Poland); and 3) a categorical and ordinal variable of the number of additional children intended (for the study of Estonia).

While total intended fertility, i.e., the number of current children plus number of additional children intended, is a fertility measure more commonly used, I am not able to employ it as the dependent variable in my analyses because of simultaneity bias. This bias occurs when there is a feedback relationship between the independent variables and the dependent variable, which would be the case here with such a dependent variable because its "number of current children" component was experienced before the measurement of the gender equity variables was taken.

The reason for using two different fertility measures is to be able to better estimate the robustness of McDonald's theory. Also, the effects of gender equity might well vary across the different fertility measures and be more notable in regard to the number of children intended rather than the more immediate decision of having another child (Miettinen et al. 2011). Therefore, it is desirable to examine the effects of gender equity on several different fertility variables.

In Chapter V I estimate two models using the data for Poland, namely a logistic regression model for my dichotomous dependent variable and a Poisson regression model for my count variable of the number of additional children intended. In Chapter VI I estimate two models using the data for Estonia, namely a logistic regression model for my dichotomous dependent variable and an ordered logistic regression model for my categorical and ordinal variable of the number of additional children intended. The models for both countries, particularly the logistic regression equations, are kept as similar as possible so that at least some general comparisons of the results may be made. However, although fairly alike, the measures of gender equity for both countries are not identical. I discuss this in more detail in the next section of this chapter where I present the operationalization of my independent variables.

One of my research interests involves comparing the impact of gender equity on the fertility of Polish and Estonian men and women because the majority of the studies conducted so far have focused almost exclusively on women or on couples. Therefore, in Chapters V and VI for each of the dependent variables I estimate separate models for

women and men and, when applicable, I examine the direction and magnitude of any differences in the impact of gender equity on fertility. In the methods section of this chapter I discuss the statistical methodology employed for this purpose.

Variables

As I have already mentioned, the international dataset contains over 350 variables. Therefore, through a thorough selection process, I have picked the ones that capture the relevant and necessary information for my analyses. I now discuss which variables are eventually used and the extent to which they are recoded. In the following section of Chapter III, I review the operationalization of the dependent, independent and independent control variables.

Dependent Variables

In order to address all my research questions, I need fertility variables as the dependent variables for my models.

I employ measures based on fertility intentions rather than realized, i.e., actual fertility. Although the latter would allow for more powerful conclusions, due to the cross-sectional nature of the data it is impossible to model the actual transitions to a second or higher order birth. The advantage of the intended fertility measures, however, lies in the fact that they allow the researcher to capture the effects of the most current circumstances, particularly ones that change fairly rapidly such as policies, while making some projections about fertility and trying to understand potential future fertility behavior.

There are debates about the extent to which fertility intentions can be used to predict further childbearing. Some confidence about the reliability of the findings, specifically those based on whether or not the respondent intends to have another child, can be drawn from the fact that the question "do you intend to have a/another child is a direct measure of sequential decision that woman or couples actually make and thus should be closely linked to fertility behavior" (Morgan and Hagewen, 2006). In fact, Westoff and Ryder (1977) found that at the individual level, intentions work better as predictors of future fertility than any other demographic and socio-economic characteristics. Despite all this, it should be remembered that there are shortcomings related to the use of fertility intentions because the eventual fertility behavior can often be different (see e.g. Toulemon and Testa 2005).

But setting aside the issue of whether intentions are a good predictor of behavior, in order to support the reliability of my results about the effects of gender equity, it is worth noting that some studies in the area of gender perspectives on fertility compare the results for intended and realized fertility and report the findings to be rather close. For instance, Kaufman (2000) found the effect of gender role attitudes on fertility intentions and fertility outcomes to be similar, although stronger in the former case for both men and women. Nevertheless, some caution is also required because of the explicitly contrasting results of Puur and colleagues (2008) using intended fertility, and of Westoff and Higgins (2009) using realized fertility (both discussed in Chapter II).

In regard to intended fertility, it tends to be more desirable to use a question imposing a certain, relatively short time period on the intention to prompt the consideration of constraints or circumstances favoring the actual realization of the fertility intention. However, the research of Buber-Ennser (2003) which focused on the influence of the distribution of household and childbearing tasks on fertility of Austrian women has indicated that the effects of the independent variables on the fertility desires for the next two years and for an undecided point in time were very similar. Therefore, I feel fairly confident using the available question to construct my dependent variables, namely "Do you intend to have a/another child in the future?"

Another aspect of my dependent variables deserves some discussion. The first dependent variable in the analyses is a measure of fertility intention, i.e., whether or not the respondent expresses an intention to have a second or higher order birth in the future. I recoded the responses so that "yes" equals one and other responses, "no" and "don't know, I am not sure" equal zero. The second dependent variable, namely the number of additional children intended, involves information about the number of additional children respondents intend to have; this is information provided by them in case of a positive answer (i.e. 'yes') to the fertility intention question. Again, in this situation I recode those, who are not sure as intending zero additional children in the future.

Before deciding to treat those women and men who didn't know or were uncertain about having an additional child equally to those intending zero additional children, I conducted some exploratory analyses. I now discuss in greater detail the

results of these analyses. I have examined how men and women answering “yes,” “no” and “don’t know/I am not sure” compared across my gender equity variables. If there is no difference between respondents not intending and uncertain about having another child, then it is justified to merge the two categories. I report the results of my tests below (see Tables 3, 4, 5, and 6). The significance value is based on the Pearson chisquared statistic, which is corrected for the survey design with the second-order correction of Rao and Scott (1984) and is converted into an F statistic (StataCorp 2009).

The results of the exploratory analyses indicate that there are no significant differences between Estonian women who intend to have no additional children in the future and those who are uncertain about their future fertility, i.e. the division of household labor is not significantly more equal for either of the groups and both groups perceive same levels of gender equity in the family-oriented institutions. The same holds true for Estonian males.

Similarly in Poland, as the results below indicate that, there are no significant differences among respondents claiming that they intend no further children and those uncertain about their future fertility. At the same time, there are some differences between the former group and those expressing positive fertility intentions. The analyses discussed here reveal that there are statistical differences in this respect between Polish men intending to have another child and those not yet certain, namely there is less traditional gendering of the division of domestic work among those men, who have

positive fertility plans for the future. Corresponding differences between women answering "yes" and "don't know/I am not sure" to the fertility question are not found.

I therefore believe it is reasonable to assume that Polish and Estonian men and women in the "don't know/I am not sure" category can be combined with the "no" category and treated as intending no additional children; and it follows that they are also treated as responding zero to the question about the additional children intended. This is the only way through which I can avoid removing numerous cases from the analyses. For comparison, I run the same models without the individuals who responded "don't know/I am not sure" to the fertility question and comment on the results in Chapters V and VI.

Table 3 Polish Females - Differences on the Independent Variables across the Groups of Respondents with "yes", "no" and "don't know/I am not sure" Answers to the Fertility Intention Questions[2]

independent variable	no vs don't know/ I am not sure	yes vs don't know/I am not sure
gender equity in the family	Design-based F(1, 498)=0.6404 P = 0.4239	Design-based F(1, 251)=2.1304 P = 0.1457
gender equity in the family-oriented institutions	Design-based F(1, 498)=3.8425 P = 0.0575	Design-based F(1, 251)=0.1296 P = 0.7192
gender equity in the individual-oriented institutions	Design-based F(1, 498)=3.4557 P = 0.0636	Design-based F(1, 251)=0.0063 P = 0.9368

[2] For the Polish male and female samples, I use the least stringent definition of gender equity for the gender equity in the family variable, (I discuss this in greater detail in the section concerning the operationalization of the independent variables).

Table 4 Polish Males - Differences on the Independent Variables across the Groups of Respondents with "yes", "no" and "don't know/I am not sure" Answers to the Fertility Intention Questions

independent variable	no vs don't know/ I am not sure	yes vs don't know/I am not sure
gender equity in the family	Design-based F(1, 370)=0.3669 P = 0.5451	**Design-based F(1, 194)=4.7239 P = 0.0310**
gender equity in the family-oriented institutions	Design-based F(1, 370)=0.7026 P = 0.4025	Design-based F(1, 194)=0.4899 P = 0.4848
gender equity in the individual-oriented institutions	Design-based F(1, 370)=2.7863 P = 0.0959	Design-based F(1, 194)=0.0014 P = 0.9700

Table 5 Estonian Females - Differences on the Independent Variables across the Groups of Respondents with "yes", "no" and "don't know/I am not sure" Answers to the Fertility Intention Questions

independent variable	no vs don't know/ I am not sure	yes vs don't know/I am not sure
gender equity in the family	Design-based F(1, 124)=1.3379 P = 0.2496	Design-based F(1, 84)=1.7884 P = 0.1847
gender equity in the family-oriented institutions	Design-based F(1, 124)=0.0180 P = 0.8935	Design-based F(1, 84)=0.6540 P = 0.4210

Table 6 Estonian Males - Differences on the Independent Variables across the Groups of Respondents with "yes", "no" and "don't know/I am not sure" Answers to the Fertility Intention Questions

independent variable	no vs don't know/ I am not sure	yes vs don't know/I am not sure
gender equity in the family	Design-based F(1, 82)=0.4288 P = 0.5144	Design-based F(1, 61)=0.0634 P = 0.8020
gender equity in the family-oriented institutions	Design-based F(1, 82)=2.6915 P = 0.1047	Design-based F(1, 61)=1.5721 P = 0.2147

Independent Variables and Hypotheses

My independent variables are aimed at capturing gender equity in different social institutions. For the Polish sample I construct three such variables, namely gender equity

in the family, and in the family- and individual-oriented institutions. For the Estonian sample only the first two of the three variables are available.

For the sample of Polish males and females, the GE (gender equity) in the family - tasks man is involved in variable captures the way partners organize their household work and represents gender equity in the family. Because household tasks in most households are usually segregated by sex, to get at the gender-equity aspect in their execution, five tasks that are traditionally done by women on a daily basis and are most time consuming are selected, namely, preparing meals, cleaning, shopping, washing the dishes, and laundry. The variable is constructed using the question "Please indicate who usually carries out the following activities related to household duties (preparing meals, cleaning, shopping, washing the dishes and laundry)". Each response "usually me and my partner", "usually me" for males and "usually my partner" for females is coded one and it is coded zero for all other arrangements, namely, if it is the female respondent, the female respondent and somebody else from outside the household, the male respondent's partner, another member of the household, another person outside of the household, and the respondent's or his/her partner's parent who usually carry out each of the above duties. The responses to all five items are then recoded into 5 dichotomous variables to differentiate between couples in which no tasks are shared by the man and the woman or none of the tasks are done by the man and those in which the man is involved in at least one task, between couples in which the man is involved in none or one task and couples in which the male partner contributes to at least two tasks, and so on (see Table 7). In

this way I want to test the effects of using different operationalizations of the variable corresponding to less and more stringent definitions of gender equity in the family. Focusing on men's contribution to feminine household chores is consistent with how McDonald defines a gender-equal organization of family work, i.e., that gender does not determine the specific responsibilities of the partners.

Table 7 Operationalization of the Gender Equity in the Family - Tasks Man is Involved in Variable for Polish Men and Women

5 dichotomous variables		Yes	No
gender equity in the family - tasks man is involved in	at least 1 task	1	0
	at least 2 tasks	1	0
	at least 3 tasks	1	0
	at least 4 tasks	1	0
	all 5 tasks	1	0

For the Estonian sample of men and women, GE (gender equity) in the family - man's involvement in domestic duties is the corresponding variable. The question available in the questionnaire for its construction is less specific and concerns domestic duties in general, namely, "Who carries out the household work usually in your family?" Because of the way the question is asked, namely generally about household work, I make the assumption that in most of the cases, it would be associated by the respondents with typical feminine tasks, i.e., for instance cooking rather than taking care of family administrative affairs. Each response "generally in equal shares," "usually I do" for

males and "mostly my partner" for females is coded one, and it is coded zero for all other arrangements, namely, if it is the female respondent, other household members, and non-household persons who are primarily responsible for the household duties.

One important issue should be mentioned in regard to the first of my independent variables, namely, the fact that the response to the question about the responsibility for domestic work is obtained only from one of the partners, either the woman or the man. This is a fairly serious limitation because studies suggest that the responses of each of the partners to the question about hours spent on household labor can differ substantially, and will differ for a number of reasons such as social desirability or lacking the knowledge about the true amount of time committed by the partner. For instance, a recent study of Kamo (2000) has revealed that there are no significant discrepancies in the reporting of the wife's contribution to domestic work, while the husbands, in comparison to their wives' reports, declare more time spent on housework. One way of overcoming this problem in examining the effects of gender equity in the family, is by constructing the measure based on the average of the time devoted to domestic work as reported by the man and the woman (see e.g. Torr and Short 2004). However, such an option is not available with the PPAS data. Nevertheless, I would expect the potential bias and discrepancies from the true commitment to domestic work to, perhaps, not be as substantial with my data, as the question does not ask the respondents about the exact amount of time allocated to such work but rather for a more general evaluation of who usually tends to perform this work or a particular duty. My only way of evaluating the

extent of this potential bias is by performing an indirect test, namely examining if there are any significant differences between the men and the women in how they report the sharing of the responsibilities for domestic work. My analysis is based on the corrected Pearson chisquared statistic and reveals that there are no such differences for Estonian men and women, i.e., the same proportions of each sex report that the work is usually carried out by the woman, by the man, in equal shares, or by others. In case of Polish men and women, the same is true. For none of the five duties based on which the gender equity in the family variable is constructed, are the differences between men and women in their reporting of who usually performs them significant, or in other words, the same shares of men and women admit that it is usually the female partner, the male partner, or both partners responsible for preparing meals, cleaning, shopping, washing the dishes, and laundry, or that there is a different family arrangement. With these results, I can be fairly confident about the soundness of my measure pertaining to the division of domestic work between partners.

Regarding my first independent variable, I hypothesize that the fertility intentions expressed by Polish and Estonian males and females aged 18-44 with at least one and no more than 3 children and living with their partner will be associated with the levels of gender equity in the family (H1); men and women in partnerships, where the man is involved in at least some or all of the domestic chores, are more likely to have positive fertility intentions, i.e., intend to have another child and intend more additional children, net of other demographic and socio-economic characteristics.

Although I hypothesize the same effect for both men and women, the literature suggests the effect is likely to be different. Women who live in more gender-equal arrangements, namely, whose partners are involved in some or all of the domestic chores, may be predicting that the additional work associated with the birth of another child and additional children will not fall on them alone. Thus they are more likely to have higher fertility intentions. As discussed in Chapter II, the association might be counterintuitive for men since the costs of children are higher for those in more gender-equal partnerships. At the same time, however, men who are more engaged in household responsibilities and possibly more involved in the lives of their children, might experience more joy from parenthood, and would be more likely to be more pro-family in general.

According to McDonald "the gender equity model does not imply exact equality between the man and the woman in any heterosexual couple" (McDonald 2000b: 3); his reasoning hence influenced my above way of operationalizing the independent variable. However, out of pure scholarly curiosity and for the sake of thoroughness, both in case of Poland and Estonia, I also test the results of models, in which the gender equity in the family variable is constructed exclusively on the basis of the men and women sharing the duties; i.e., in case of Polish couples, at least one of the five tasks is usually performed by the respondent together with his or her partner; and in case of Estonia the household work is performed by the man and the woman generally in equal shares. I

briefly comment on these results when discussing my models of interest in Chapters V and VI.

My second independent variable captures GE in the family-oriented institutions and in accord with McDonald's suggestion about measuring gender equity, it is based on respondents' evaluations of whether these institutions allow women to take advantage of the opportunities available to them in market employment on terms comparable to males. Positive evaluations mean that the persons believe there is gender equity in these institutions, i.e., despite recognizing individuals as members of families, the model of the family on which they are founded is gender equal. In Poland, this variable is dichotomous and it is constructed on the basis of the agreement and disagreement to two statements regarding family policies and parental leave. A respondent was assigned a score of one to indicate a fairly good evaluation of family support services, i.e., some level of gender equity in the family-related institutions and zero otherwise. The specific question used to construct the variable is presented in Table 8.

Table 8 Specific Questions Used for the Construction of the GE in the Family-oriented Institutions Variable for Polish Males and Females

GE in family-oriented institutions: "Do you agree or disagree with the following statements?"	
a) Family policies concerning children (provision of day-care facilities, parental leave and so on) are sufficient to provide equal chances for women on the labor market, b) Mothers who had parental leave face difficulties to re-gain their former professional position (reverse coded)	1 = either one or both statements are true 0 = both statements "false" or "I have no opinion" about both.

For Estonian men and women the variable is also dichotomous and is based on questions asking for evaluations of government policies with respect to reconciling work and motherhood. A respondent's score of one indicates that he or she evaluated as very efficient or rather efficient either of the policies regarding work and motherhood, i.e., it means the person perceives some level of gender equity in the family-oriented institutions. Table 9 presents the specific questions used for the construction of this independent variable for Estonia.

Table 9 Specific Questions Used for the Construction of the GE in the Family-oriented Institutions Variable for Estonian Males and Females

GE in family-oriented institutions	
In general, how do you rate government policies with respect to reconciling work and **motherhood** in Estonia over the the past ten years?	1 = evaluated as very or rather efficient 0 = evaluated as rather or completely inefficient or answered "don't know"

As I have discussed earlier, McDonald notes that there are methodological difficulties associated with gender equity measures. Naturally, my doctoral study also faces this challenge and offers no perfect solution. The measures of gender equity in the family-oriented institutions for Poland and Estonia, and for the individual-oriented institutions for Poland, are based on the perceptions of men and women. This is consistent with McDonald's suggestions that "gender equity would be evaluated on the basis of the assessments of women and, perhaps, men in the society under study" (McDonald, 2000a: 429). This approach is also justified by W. I. Thomas's

famous argument that "if men define situations as real, they are real in their consequences" (Thomas and Thomas, 1938). It should be noted, however, that these two measures based on perceptions are being weighted in their impact along with a measure based on actual behavior, namely, the gender equity in the family variable.

Regarding my second independent variable, I hypothesize that the fertility intentions expressed by Polish and Estonian males and females aged 18-44 with no more than 3 children and living with their partner are associated with the levels of gender equity in the family-oriented institutions (H2); men and women perceiving relatively high levels of gender equity in these institutions are more likely to have higher fertility intentions.

As argued by McDonald, it is the low gender equity within the family and in other family-related institutions that will tend to dampen fertility. A simultaneous examination of the impact of low gender equity in these two settings is seldom undertaken; thus it is one of the specific issues I address in my dissertation. Since appropriate data are available both for Poland and Estonia, in Chapters V and VI in each of the models discussed above I investigate the relative importance of gender equity levels in the family-related institutions and in the family in relation to fertility. I hypothesize a positive association between gender equity in the family-oriented institutions, net of arrangements within the family, since, thanks to these more gender-equal institutions, the costs of having children are spread more equally between the family and the society.

Finally, in earlier empirical investigations, relatively high gender equity in the labor market was usually assumed by the researchers, so that issues of gender discrimination in market employment were not considered. In the case of post-communist countries it seems important to account for a regress in women's labor force participation, particularly in the case of Poland with the increased gender discrimination after 1989, because it is likely, as previous research has shown (see e.g. Mishtal, 2009), that women may limit their fertility intentions in response to market employment discrimination. Only in the case of Poland are appropriate questions available to capture individuals' perceptions about GE in the individual-oriented institutions and more specifically in market employment. However, as the literature review has shown, the issues of gender in employment might be more pertinent to the situation of women in Poland compared to women in Estonia, who did not experience much higher rates of unemployment compared to their male counterparts. My third independent variable for Poland is based on respondents' evaluations of the situation of women in the labor market and more specifically about women's chances to pursue professional careers and equal pay. Respondents who perceive some gender equity in the institution of market employment, received a score of one, and a score of zero if otherwise. The specific question used is presented in Table 10.

In regard to my third independent variable, I hypothesize that the fertility intentions expressed by Polish males and females aged 18-44 with no more than 3 children and living with their partner are associated with the levels of gender equity in

the individual-oriented institutions and labor market in particular (H3); men and women perceiving relatively high levels of gender equity in the labor market are more likely to have higher fertility intentions. This hypothesis is formulated on the assumption that under the economic situation in Poland the majority of individuals cannot afford to op-out of employment.

Table 10 Specific Questions Used for the Construction of the GE in the Individual-oriented Institutions Variable for Estonian Males and Females

GE in individual-oriented institutions: "Do you agree or disagree with the following statements?"	
a) Women have the same chances as men to pursue a professional career, b) Women are usually paid less than men in equal positions on the labor market (reverse coded).	1 = either one or both statements are true 0 = both statements "false" or "I have no opinion" about both.

In both countries, in light of a fairly difficult economic situation in the early 2000s and high uncertainty about the labor market, women typically did not voluntarily leave employment, although as I have discussed in Chapter I, this tended to be more often the case in regard to Estonian women. In such a situation of high labor force participation of women and in the context where child care services as well as other family-friendly arrangements are not available or limited, the behavior of men and their contribution to domestic tasks seem to be particularly essential to fertility intentions. Thus, as stated before, I expect that higher gender equity at home will have a significant positive impact on the fertility intentions of women and men in the two countries.

However, the effect may well be more pronounced in Poland, which seems to be offering lower levels of societal support to families with children. At the same time, it is likely that in Estonia, where gender equity is relatively higher in family-oriented institutions, i.e., particularly, where child care services are more developed, this factor might turn out to be a more significant predictor of fertility intentions than gender equity at home because women need to rely less on the support from men to be able to combine work and family.

Independent Control Variables

All of the analyses include a few independent control variables that may influence fertility intentions. I now discuss each of them. These variables are kept very similar for the Polish and Estonian models. Since I want to devote some attention to the descriptive results regarding gender equity for Polish and Estonian males and females, I discuss the descriptive results for all my variables in Chapter IV.

Each of the three full models controls for the respondent's age in years since older persons might already have more children than younger respondents because they have lived more of the childbearing years and have thus lower fertility intentions, while they also have less time for rearing the children before reaching older age. Age is treated as an interval variable.

Secondly, I control for the individual's current number of children, i.e., an interval variable representing the number of his or her own, adopted or step children. I

introduce this control because it is an important aspect of the total desired number of children and thus related to fertility intentions.

The next important variable that needs to be controlled for in the models is the respondent's education. It is operationalized with a dichotomous variable "post-secondary education" with primary, lower secondary and higher secondary being the reference category. In general, as implied by empirical and theoretical research, it is important to control for education because persons with higher educational credentials tend to have fewer children than less educated individuals with the explanation being offered that higher education is associated with increased opportunity costs of childbearing (Becker 1981; Mason 1997). On the other hand, higher education of women may be predicting higher fertility intentions because women with college degrees are in a better position to negotiate more gender equity in the division of domestic work or have more economic assets to purchase services substituting their own housework (Coltrane 2000).

Because the division of the unpaid family work is in important ways determined by the partners' involvement in paid work, to extract the individual impact of gender equity in domestic work on fertility, it is important to account for the employment status of the men and the women. The respondent's employment status, i.e., either the women's in the female subsample or the men's in the male subsample, is measured with three dichotomous variables with the reference category being "no job" and the other two categories being "full-time employment" and "part-time employment." In addition to

controlling for the potential negative effect of the role conflict, I would argue that distinguishing between full-time and part-time employment might help to capture the potential access to family friendly benefits such us flextime, for example. These, if any, would be more likely available to full-time workers. On the other hand, it is significantly easier for part-time workers to reconcile the family and work roles. Ideally, I would want to control for the effects of blue versus white collar jobs since the latter offer more flexibility in general. However, such information is not available in the dataset. The employment status of the partner is measured with a dichotomous variable "partner employed full- or part-time," while "no job" is the reference category.

Limiting the number of children might be a response to high economic uncertainty and the increasing costs of raising children after the state support for families was reduced, and especially significantly so in Poland. Therefore, in respect to intended fertility, the household's material status is important. Originally, the household's income in both countries is measured on the basis of the respondent's location on a 5-point scale variable. Since the information regarding the width of each of these categories is not available, I recode the income variable into a dichotomous variable. A value of one on this variable indicates that the respondent's household income falls into the top-fifth category and a value of zero indicates that the income is in any of the categories below[3].

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[3] The share of Polish respondents who scored one on this variable is rather low, i.e. less than 10%. Therefore, it is hard justifying such recoding of the variable based on its distribution alone. Thus, for Poland I replicated the results recoding as one respondents from households falling into the top fourth and fifth categories combined and the results remained the same. The problem does not apply to Estonia, where the variable is distributed such that a little over a quartile of males and females scores one on the top-fifth income category variable.

One limitation of this way of getting at income level should be mentioned. No data are available on the individual's income or their contribution to the monthly household income; the information available applies only to the combined household income contributed by both partners. However, the respondent's educational attainment is controlled for, and as human capital theory would suggest, one's level of education is strongly related to income over the life course.

The next independent control variable is introduced to account for the widely recognized fertility differences by type of place of residence. The "large town residence" is a dichotomous variable distinguishing between rural and urban areas, where one indicates that the respondent lives in a large town, and a zero combines the categories of "rural area," "small village," and "small town."

Finally, subjective religiosity has been shown to be a good indication of the respondent's values and is thus a significant factor determining fertility. This applies particularly to Poland, which is one of the most Catholic countries in the world. The 2001 Public Opinion Poll suggests that 96.0% of the population claimed to be believers, and among these, 96.4% belonged to the Catholic Church (Public Opinion Research Center-CBOS 2001). Therefore fertility behavior is likely to be under the strong influence of the Church's values and ideas; moreover, research suggests that religiosity has a significant positive effect on fertility. Thus, a dichotomous variable, namely, "very religious" (1=yes, religion plays a very important role) is introduced to capture the

importance of religion in the respondent's life rather than the nature of his or her religious practice.

In contrast to Poland, Estonia, where the government successfully controlled and restricted religious practices until the collapse of the former Soviet Union, is the least religious country according to a 2009 Gallup survey (Crabtree 2010). Evangelical Lutheranism is the dominant religion in Estonia, which is followed by Orthodox Christianity. However over 60% of the population declares to be unaffiliated or affiliated with an unspecified church (The World Factbook 2009). In my dataset only the information about the importance of religion is available, while nothing is known about the affiliation of the persons. Because of this low level of religiosity in Estonia, while I am able to control for the effects of religion in the case of women, I am not able to do so for men in the logistic regression model because of one-way discrimination, whereby high religiosity of the male respondent perfectly predicts a positive fertility intention.

Because of the focus on the division of domestic work, the samples for both countries include only women and men who were living with a spouse or partner at the time of the survey. Because of low cohabitation rates in Poland, only married males and females met this restriction criterion and were included in the final sample;hence there is no need to control for marital status in the models, although this is certainly a characteristic that continues to have a big impact on fertility. The situation is different in Estonia, where a fairly large share of men and women reported being in a cohabiting relationship. Therefore, I include the "married" independent control variable in the

Estonian models; it is a dichotomous variable coded as one if the respondent is married, and zero if he or she is cohabiting.

Finally, because I am interested in establishing whether there are any differences between the effects of gender equity on male and female fertility, I begin by estimating all the models for my chosen dependent variables on a subsample including both men and women. In this case, I use a dichotomous variable "female" to indicate whether the respondent is a female, coded one if female, and zero if male.

All together, in the full model examining the effects of gender equity on fertility, I use all of the above independent control variables (see Table 11). These are all characteristics that may simultaneously have an impact on the fertility intentions of men and women as well as on the levels of gender equity in their partnerships and their perceptions of gender equity in the different social and economic institutions. Thus, failing to account for their effects would make it impossible to rule out the possibility that the detected relationship between any of my main independent variables and fertility could well be spurious. By including these variables, I am able to establish whether indeed the relationship is a significant one, net of any other factors. This concludes my discussion of the operationalization of my variables to be used in my models and my hypotheses. I now move on to a review of the methods that are used to analyze the effects of gender equity on fertility.

Table 11 Independent Control Variables Used in the Models for Poland and Estonia

Independent control variables		
Age in years	Interval	
Number of children	Interval	
Married (Estonia only)	1=yes	0=no
Very religious	1=yes	0=no
Large town residence	1=yes	0=no
Post-secondary Education	1=yes	0=no
Employment status	No job	ref
	Part-time employment	
	Full-time employment	
Partner employed full- or part-time	1=yes	0=no
Household income in top-fifth category	1=yes	0=no

Methods

This section of the chapter discusses the methods employed to analyze the impact of gender equity on fertility. I use three different kinds of dependent variables, and each requires a different statistical method for its analysis. First I review the logistic regression, which is used for the analysis of the impact of gender equity on my first dependent variable, i.e. whether or not the respondent intends to have a second or higher order birth, which is a dichotomous or a binary outcome variable. In the case of my second dependent variable, a count variable of the number of additional children

intended (Poland), the Poisson or negative binomial regression is appropriate. Finally, for my third dependent variable, a categorical and ordinal variable of the number of additional children intended (Estonia), ordered logistic regression needs to be used.

The methodology for estimating the logistic regression equation serves as the foundation for other complex models, such as the ones for count variables discussed later below (see e.g. Long and Freese 2006; Vittinghoff, Glidden, Shiboski, and McCulloch 2005). The method allows for the estimation of the effects of the independent variables on the *probability* of the event of interest occurring. By fitting the logistic model, one overcomes the two essential problems of using an ordinary least squares regression for the analysis of a binary variable. Firstly, the latter estimation methodology could yield values of the dependent variable outside the range of 0 to 1, which would be nonsensical as the modeled probability must lie between 0 and 1. Secondly, it is "required that the outcome variable follows an approximate normal distribution" (Vittinghoff et al. 2005: 159), which is an assumption impossible to meet for a dichotomous variable.

Formally the model estimating the probability is written as (Vittinghoff et al. 2005: 160)

$$P(x) = \frac{\exp(\beta_0 + \beta_1 x_1)}{1 + \exp(\beta_0 + \beta_1 x_1)} \qquad (1)$$

In this form, the model is nonlinear and thus "the magnitude of the change in the outcome probability that is associated with a given change in one of the independent variables depends on the level of all the independent variables" (Long and Freese 2006:

131). The model can however be linearized by transforming the predicted probability of the outcome dependent variable into the natural logarithm of the odds of the outcome, as in the following equation (Vittinghoff et al. 2005: 161):

$$\log\left[\frac{P(x)}{1-P(x)}\right] = \beta_0 + \beta_1 x_1 \qquad (2)$$

In the above equation, the log of the odds of the outcome is linearly related to the independent variables.

There are a number of ways in which the results of the logistic regression equation can be interpreted. The value of the logit coefficient for the independent variable represents the amount of increase or decrease in the predicted log odds of the dependent variable for every additional unit of the independent variable, other things being equal. The interpretation of the logit coefficient is easy to arrive at, but it is not easily understood. However, by exponentiating the logit coefficients, one obtains the odds ratios. The odds ratio indicates that for every unit change in the independent variable, other things being equal, the odds of the event operationalized in the dependent variable are multiplied by its value; if it is larger than 1, the odds increase, if it is smaller than 1, the odds decrease. Compared to the logit coefficient, the interpretation of the odds ratio is much more intuitive.

As I have mentioned, the logistic regression equation methodology is used for the estimation of the impact of gender equity on the intention to have an additional child. I now move on to a discussion of the model specifically designed for count outcomes,

which I use for Poland to analyze the count variable of the number of additional children intended.

"Although the linear regression model has often been applied to count outcomes, this can result in inefficient, inconsistent, and biased estimates" (Long and Freese 2006: 349). Therefore it is recommended to employ models specifically suited for count outcomes, such as the Poisson or negative binomial regression, which are the foundation for other models (Long and Freese 2006).

The Poisson regression equation is an extension of the univariate Poisson distribution, which itself defines the "relationship between the expected count, μ, and the probability of observing any observed count, y" (Long and Freese 2006: 349). In the Poisson regression model the count variable is a nonnegative integer, which has a Poisson distribution. However, its conditional mean, unlike in the theoretical Poisson distribution, depends on the independent variables. Formally the model estimating the number of counts for each observation is written down as:

$$\mu_i = \exp(\beta_0 + \beta_1 x_i) \qquad (3)$$

and it is nonlinear, i.e. the relationship between μ_i and the independent variables is nonlinear.

The Poisson regression model fits the data only if there is no over- or under-dispersion in the distribution of the count variable, meaning that the variance is not greater or smaller than the mean. Otherwise, the Poisson estimates are consistent but inefficient; i.e., the model tends to yield z-values, which are biased upwards. Therefore,

in those cases where overdispersion is encountered, the negative binomial regression (NBR) is the recommended way of estimating the count variable.

The negative binomial regression model adds an error term **ε** to the Poisson regression model and it is written as the following equation:

$$\mu_i = \exp(\beta_0 + \beta_1 x_i + \varepsilon_i) \qquad (4)$$

The error term adds variability to **μ**, which is independent of the variables in the model. The term **ε** may be interpreted "either as the combined effects of unobserved variables that have been omitted from the model or as another source of pure randomness" (Long, 1997: 231).

There are a few ways of statistically determining which modeling approach should be used in case of the particular count variable. One of them involves investigating the alpha statistic reported in the NBR model. The alpha statistic represents the extent of over-dispersion in the data. The likelihood ratio chi-square test of alpha ascertains whether the value of alpha is significantly different from zero; if its probability value is low, i.e., if it is below the conventionally accepted level of .05, this implies that there is a statistically significant amount of over-dispersion and that the NBR regression model is appropriate.

The second issue that needs to be addressed when modeling count data, especially in the context of fertility research, involves the problem of a large number of zeros in the count data and the fact that these zeros might be generated by two separate

processes (Long and Freese 2006). In the case of women's intended fertility, some women could well declare no children because they chose not to have any, while others declare no children because they are not capable of having any children in the future. In such a situation, it is recommended that the researcher estimate a zero-inflated model, either a zero-inflated Poisson or zero-inflated NBR. However, this is not a concern with my data since I am able to exclude from my analyses respondents who cannot have another child. With the Estonian data "I cannot have any more" is one of the responses to the question about fertility intentions, and those choosing this response are assumed to be involuntarily childless. Among Polish men and women, I identify and eliminate from the analyses those who identify "My state of health does not allow it" as a very important reason for giving up having a/another child (while the other responses include reasons such as "I already have all the children I wanted to have," "My professional career does not allow it," or "I would have to give up leisure-time interests"). Therefore, for both countries the zeros in the data are assumed to be generated by the same process and thus there is no need for estimating the zero-inflated model; hence I only have to decide between the Poisson and the NBR methodology.

In regard to the Poisson regression (or NBR), there is a way of interpreting the coefficients that is analogous to that of odds ratios in the logistic regression equation (Long and Freese 2006). These are incidence rate ratios (IRR), which are obtained by exponentiating the Poisson coefficients. The IRR value indicates the factor by which the

count dependent variable needs to be multiplied, holding other things constant, for each unit change in the independent variable.

Finally I review the model, which is appropriate for the analysis of my second dependent variable for Estonia, namely the categorical and ordinal variable of the number of additional children intended. The way the particular question was asked and coded in Estonia makes the responses unsuitable for the analysis of a count variable. Men and women were asked about the additional number of children intended and instructed to mark one of the following answers: “one child,” “one or two children,” “two children,” “two or three children” and so on and their corresponding answers were coded as 1, 1.5, 2, 2,5 and so on. Because I cannot assume that the distances between all the categories are equal, nor is the variable a nonnegative integer, I employ the ordered logistic model to analyze these data.

The approach for developing the ordered logistic model is parallel to that of the logistic regression for a binary outcome. “You can modify the binary logistic regression model to incorporate the ordinal nature of a dependent variable by defining the probabilities differently. Instead of considering the probability of an individual event, you consider the probability of that event and all events that are ordered before it” (Norusis 2011: 70). Therefore, with the ordered logistic regression and my Estonian data, I am interested in modeling the odds as follows: probability(score of 1) / probability(score greater than 1), probability(score of 1 or 1.5) / probability(score greater

than 1.5), etc., up to the second to last category, i.e., 4.5, because for the last category, the probability of all scores up to it is 1.

The ordered logistic model may be formally expressed as (Norusis 2011):

$$\log\left[\frac{P(y \leq j)}{P(y > j)}\right] = \beta_{0_j} - \beta_1 x_i \qquad (5)$$

In the model above j goes from 1 to the number of all outcome categories on the dependent variable minus 1. Each logit has its particular constant term, β_{0j}, also called the threshold value[4], which is "like the intercept in a linear regression, except that each logit has its own" and is "used in the calculations of predicted values" (Norusis 2011: 70-71). The ordered logit coefficient remains the same for each cumulative probability, i.e., the probability of the dependent variable falling in a particular outcome category or less. This is known as the proportional odds assumption.

Regarding the interpretation of the results of the ordered logistic model, the possibilities are the same as for the logistic regression; the preferred way is by interpreting the ordered logistic coefficients in terms of odds ratios, which indicate the amount of change in the odds of having a higher outcome on the dependent variable for every one unit change in the independent variable.

Tests for Multicollinearity

When estimating the models presented above, one of the most important preliminary tasks involves testing for multicollinearity between the independent and

[4] It should be noted that STATA does not produce the constant term for the ordinal logistic regression; the model yields cut points alongside the regular regression estimates and the effect of the constant is captured by these cut points. This difference will not affect the interpretation of the ordered logit coefficients.

independent control variables used in the model (Hamilton 2008). If perfect multicollinearity exists, meaning that there is a perfect linear relationship among the variables used to predict the dependent variable, no unique solution can be reached. While perfect multicollinearity is a very rare occurrence, high but not perfect multicollinearity is far more common. It is problematic because it is associated with little variation of the predictor variable that is independent of other variables and thus it is hard to estimate its independent effect on the dependent variable. High multicollinearity can produce equation coefficients estimates that are inefficient; the standard errors are spuriously inflated, yielding low t (or z) statistics. We may also find "nonsignificant coefficients despite high R^2" (Hamilton 2008: 224). For these reasons, it is important to examine the degree of multicollinearity in the model being estimated.

Multicollinearity is best detected by "regressing each x on all the other x variables, and then calculating 1 - R^2 from that regression to see what fraction of the first x variable's variance is independent of the others" (Hamilton 2008: 225). This fraction is known as the x variable's tolerance and it can be easily obtained in STATA. The VIF command entered after estimating the model provides a VIF value for each variable as well as a 1/VIF value, which is the tolerance. A tolerance value of at least 0.35 is desirable. I assess all my independent variables to ensure that high multicollinearity does not affect my models.

Model Diagnostics

In regard to the logistic regression, it is also important to examine the model residuals and the diagnostic statistics to evaluate each observation's influence on the regression results, i.e., on all the slope coefficients or a particular one. For a logistic regression equation, the distribution of the residuals is assumed to follow a binomial distribution, which resembles a normal distribution if the number of cases in the sample is sufficiently large. Therefore, by using the appropriate STATA commands, it is possible to examine the distribution of the Pearson residuals to see if the values of the skewness and kurtosis statistics are not above the conventionally acceptable levels of .8 and 10 respectively. If the residuals are not normally distributed, the soundness of the inferential statistics is undermined. Therefore, for all my logistic regression models I examine the distribution of the Pearson residuals. To address the issue of the influence of particular observations on the regression coefficients, the change in Pearson $\chi 2$ Statistic and dBeta statistics are available for each combination of values on the independent and independent control variables. While the former statistic indicates how the goodness of fit of the model would change if all cases with a certain combination of values on the predictor variables were removed from the analysis, the latter one "summarizes the effect of removing the *ith* observation on the entire vector β, which is the counterpart to Cook's distance for the linear regression model" (Long and Freese 2006: 151).

Unfortunately, when estimating the logistic regression, the options of -predict- in STATA 11 used for computing Pearson residuals and the influence statistics such as the

change in Pearson $\chi 2$ Statistic and dBeta, cannot be employed with the "svy" command. Therefore, examining the diagnostics for these models has to be done ignoring the survey design.

Tests of Operationalizations of the Gender Equity in the Family Variable

As the literature review has indicated, it is desirable to pay attention to the operationalization of the independent variables capturing gender equity. The question pertaining to the division of housework in the Polish study allows for a number of operationalizations of the gender equity in the family variable, depending on how stringent is the definition of "equity" being used. The main analyses for Polish men and women are based on the least stringent definition, i.e., they use a dichotomous variable differentiating between couples in which the man does not at all contribute to household chores and those in which the male partner is involved in at least one of the tasks. These results are compared with the results of models using more stringent definitions of gender equity in the family, namely, assuming that a gender equal organization of household work requires the involvement of the male partner in at least two, three, four, or five tasks, either through sharing the work or being exclusively responsible for it.

Comparison of the Effects on Male and Female Fertility

In Chapters V and VI, each of the models described above is initially estimated for

a combined subsample including both males and females. A dichotomous variable "female" (yes=1) is included in these models. If this variable is statistically significant in

the models, then the need for examining the differences between men and women is statistically supported, and the same models are then separately estimated for men and women. Afterwards the equality of the regression coefficients for the significant gender equity variables is evaluated. It is assessed with the statistical test using the formula below (Paternoster, Brame, Mazerolle, and Piquero 1998)

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}. \quad (6)$$

In the formula, which yields a z score, b_1 and b_2 are the relevant regression coefficients, and SEb_1 and SEb_2 are the standard errors for those coefficients. A significant z score would indicate that the effect of gender equity, either in the family or the family- and individual-oriented institutions, is indeed different in regard to male and female fertility.

Conclusion

In this chapter I have reviewed and discussed the data and methods employed for the purpose of analyzing the effects of gender equity on fertility. The available data determine the focus on intended fertility and necessitate the use of the logistic regression model, the Poisson regression model, and the ordered logistic regression model; this is the case because one of the dependent variables is a dummy, the other is a count, and the third is categorical and ordinal. Some additional statistical issues and considerations were also discussed in this chapter, such as the method employed for the comparison of the regression coefficients between the male and female models. In the next chapter I turn my attention to the descriptive results of my analyses.

CHAPTER IV

DESCRIPTIVE RESULTS

In this chapter I describe the characteristics of the men and women in my Polish and Estonian samples and focus primarily on the descriptive data for the variables I have chosen to capture the levels of gender equity in different institutions. As I have mentioned in the previous chapter, it is important to study both male and female fertility because men and women often differ on various characteristics, and therefore the same circumstances might well have a different impact on their intentions pertaining to having children. In all of my tabulations presented in this chapter, I report the weighted proportions accounting for the survey design of my data. As already discussed in Chapter III, when testing for the statistical significance of my tabular associations, the F statistic is used, which is the corrected version of the Pearson chisquared statistic.

General Characteristics of the Polish Male and Female Respondents (see Table 12)

The sample of all married Polish females aged 18-44 with at least 1 but no more than 3 children and living with a partner consisted of 597 women (this is the working sample number of observations, while the weighted sample size is 633). In 2001, these women were on average 34 years old, and their mean number of children was 1.93. The corresponding sample of Polish males consisted of 458 respondents (the weighted sample size is 476). The average age for men was 35 years, and they had 1.85 children on average.

Compared to men, women were significantly better educated; over 17% of females had a post-secondary education (11% a university education), whereas the corresponding shares of males were 9% and 8%. Also, the religiosity of women was shown to be significantly higher than men's; over 52% of females claimed that religion played an important role in their lives, while among males the share amounted to but 45%.

Of all the women in the sample, slightly less than 7% lived in households that fell into the top-fifth category on the the combined household income variable. The share of men was practically identical, slightly over 7%. About a quarter of all Polish women and men lived in a large town in 2001, specifically, 22% of females and 24% of males.

The differences between the sexes pertaining to employment status are all significant and probably the most pronounced. While about 54% of women claimed to have full time jobs, 84% of men were in full time employment. In Poland, relatively small shares of workers in the labor force have part time jobs; nevertheless significantly more women, namely 8%, are in such employment compared to as little as 2% of men. These percentages match the reported proportions regarding the employment of the respondents' partners in full- and part-time jobs, namely 84% of the women's partners and 61% of the men's partners. Finally, 14% of the male respondents reported having no jobs, which is significantly fewer than the 38% of the female respondents.

Table 12 General Characteristics of the Polish Male and Female Respondents

Variables	Women	Men
Age in years	33.73	34.79
Number of children	1.93	1.85
Very religious	52.03%	44.74%**
Large town residence	22.09%	24.3%
Post-secondary Education	17.27%	9.02%***
university education	11.27%	8.03%***
No job	38.25%	14.03%***
Part-time employment	8.09%	2.05%***
Full-time employment	53.66%	83.77%***
Partner employed full- or part-time	84.08%	60.72%***
Household income in top-fifth category	6.67%	7.53%
Number of observations	597	458

Notes: ** significant difference between men and women at .05 level
*** significant significant difference between men and women at .01 level

General Characteristics of the Estonian Male and Female Respondents (see Table 13)

The corresponding samples for Estonian male and female respondents, i.e., of all men and women aged 18-44 with at least 1 but no more than 3 children and living with a partner, are significantly smaller compared to the Polish ones and consisted of 165 women and only 107 men, with the respective weighted population sizes of 179 and 116.

In 2003, the Estonian women were on average 35 years old, i.e., a year older than the Polish female respondents, and had a slightly smaller average number of children, namely 1.85. The mean number of children of the Estonian men was practically identical as that of Estonian women and Polish fathers, i.e., 1.86. In the case of Poland, the restriction criteria resulted in reducing the samples exclusively to married men and women.

Table 13 General Characteristics of the Estonian Male and Female Respondents

Variables	Women	Men
Age in years	34.69	35.31
Number of children	1.85	1.86
Married	60%	59.63%
Very religious	6.06%	1.83%
Large town residence	21.21%	13.76%
Post-secondary Education	44.85%	28.44%***
university education	21.21%	14.68%***
No job	28.48%	6.42***
Part-time employment	18.18%	3.67%***
Full-time employment	53.33%	89.91%***
Partner employed full- or part-time	94.55%	62.39%***
Household income in top-fifth category	32.12%	27.52%
Number of observations	165	107

Notes: *** significant difference between men and women at .01 level

Among Estonian males and females, both married respondents and those living in a cohabiting relationship are included in the analysis; married respondents comprised 60% of the male and female samples.

In general, in 2003, the respondents in Estonia were much better educated than the Polish men and women. As many as 45% of women had some post-secondary education, almost half of it being a university degree. Compared to women, men had significantly lower educational attainment, although it was still higher than that of Polish men; about 28% of Estonian men had a post-secondary education, with almost 15% a university education.

As I have mentioned in the previous chapter, in stark contrast to the situation in Poland, Estonia is one of the least religious countries in the world. This can be seen in responses pertaining to the importance of religion. In 2003 as little as 6% of women and 2% of men claimed that religion played a very important role in their life, and there were no significant differences between the sexes in regard to their level of religiosity.

Data concerning household income suggest a slightly more equal distribution of income in Estonia as compared to Poland. Only about 7% of Polish respondents lived in households that fell into the the top-fifth category of combined household income. The same was true for over 32% of Estonian women and almost 28% of Estonian men. The proportion of women living in a large town was the same as for the Polish men and women, namely 21%. The share of men living in a large town was 14%, which was not significantly smaller than the percentage for women.

Finally, similar to Poland, there were very significant differences pertaining to the employment status of men and women. In 2003 in Estonia, 53% of women had full time jobs, which is almost the exact same share as that of Polish women. Ninety percent of Estonian male respondents were in full time employment, which is about 6% more than Polish men. Additionally, part time employment was significantly more common among Estonian women; 18% of the females had part time jobs, and this is 10 percentage points more than for Polish females. However, the share of men with part time jobs was almost the same as in Poland and significantly lower compared to Estonian women, namely 4%. These percentages match pretty closely the reported shares regarding the employment of the respondents' partners, i.e., 95% of the women's partners and 62% of the men's partners.

Having discussed the general demographic and socioeconomic characteristics of my Polish and Estonian respondents, I will now describe the general distribution of my dependent and independent variables. Again, the focus will be primarily on the differences and similarities between men and women in both countries. In the closing sections of this chapter, I will review how in Poland and Estonia certain sociodemographic factors are related to gender equity in the family and perceptions about gender equity in different institutions.

Polish Male and Female Respondents - Descriptive Results for the Dependent and Independent Variables (see Table 14)

In 2001, of all married Polish females aged 18-44 with at least 1 but no more than 3 children and living with a partner, only 16% declared that they intend to have another child in the future. This fairly small share of women with positive fertility intentions is not significantly different from the 19% of men who expressed such intentions. The average additional number of children intended by females was 0.23, while the corresponding number for males was 0.28; again the difference between the sexes is not significant.

I now move on to the data pertaining to gender equity in the family. Only in the case of the least stringent definition, i.e., families in which at least one task is performed jointly by the partners or by the man, is the proportion of couples characterized by gender equity greater than the share of those in which such an arrangement is absent, namely, 53% for females and 58% for males (see Table 14). Already with the conceptualization of gender equity based on man's involvement in at least 2 of the 5 tasks, this proportion drops for both sexes down to around 30%. Then it gradually decreases all the way down to 8% for women and 10% for men as the definition of gender equity becomes more and more stringent. The data presented in Table 14 suggest that men tend to evaluate their participation in the performance of household labor slightly higher than do women. This is consistent with the research discussed in Chapter III concerning the accuracy of men's and women's reports on the division of domestic

work. However, as mentioned in the earlier discussion of my data regarding this issue, for none of the specific number of tasks in which men are involved is the difference between men and women significant.

Table 14 Descriptive Results for the Dependent and Independent Variables for the Polish Male and Female Respondents

		Women		Men	
Variables					
Additional number of children intended		0.23		0.28	
		Yes	**No**	**Yes**	**No**
Intends another child		16%	84%	19%	81%
GE in the family - man involved in	at least 1 task	53%	47%	58%	42%
	at least 2 tasks	32%	68%	36%	64%
	at least 3 tasks	21%	79%	22%	78%
	at least 4 tasks	13%	87%	16%	84%
	all 5 tasks	8%	92%	10%	90%
GE in family-oriented institutions		34%	66%	43%***	57%
1st component: family policies		17%	83%	22%**	78%
2nd component: parental leave		20%	80%	28%***	72%
GE in individual-oriented institutions		60%	40%	69%***	31%
1st component: equal career prospects for women		46%	54%	49%	51%
2nd component: equal pay		34%	66%	43%***	57%

Notes: ** significant difference between men and women at .05 level
*** significant significant difference between men and women at .01 level

However, as presented in Table 14, there are significant differences between Polish males and females in their perceptions about gender equity in the family- and individual-oriented institutions. In general, more gender equity is ascribed to the latter, i.e., by 60% of females and as much as 69% of males. This substantially exceeds the 34% of females and 43% of males in case of the family-oriented institutions. The differences between men and women are significant in regard to both kinds of institutions but are more pronounced in case of the family-oriented institutions. In fact, men and women express different opinions about each of the two components constituting the gender equity in the family-oriented institutions variable. Seventeen percent of women and 22% of men agree that "Family policies concerning children (provision of day-care facilities, parental leave and so on) are sufficient to provide equal chances for women on the labor market." Slightly larger shares, namely 20% and 28%, respectively, are of the opinion that even when taken parental leave, mothers do not face any difficulties in regaining their former professional position. In case of the two components of gender equity in the individual-oriented institutions variable, men and women are different only with regard to their opinions about equal pay. While only 34% of the female respondents believe that "Women are not usually paid less than men in equal positions on the labor market," 43% of the male respondents believe that this is true. Forty six percent and 49%, respectively, claim that "Women have the same chances as men to pursue a professional career"; statistically these shares are not different from each other.

I will now discuss the respective data for the Estonian samples.

Estonian Male and Female Respondents - Descriptive Results for the Dependent and Independent Variables (see Table 15)

Table 15 Descriptive Results for the Dependent and Independent Variables for the Estonian Male and Female Respondents

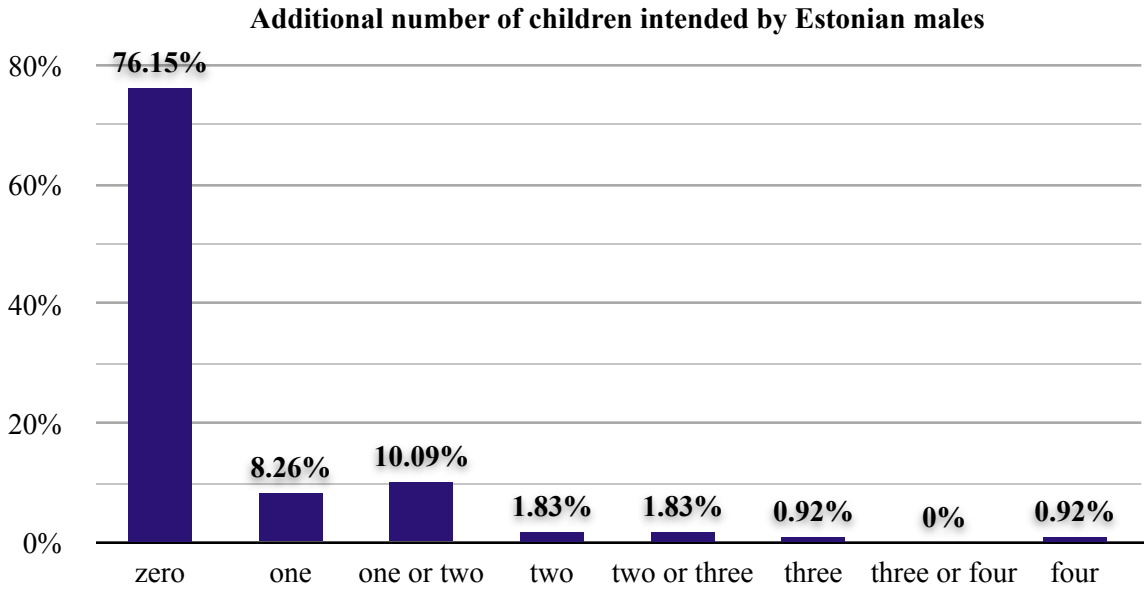
	Women		Men	
Variables	**Yes**	**No**	**Yes**	**No**
Intends another child	24%	76%	24%	76%
GE in the family - man's involvement in domestic duties	44%	56%	44%	56%
GE in family-oriented institutions	20%	80%	20%	80%

Since the gender equity variables in this case are constructed using different and more general questions, I am able to analyze them in less detail than for the Polish respondents.

In 2003, of all married and cohabiting Estonian females and males aged 18-44 with at least 1 but no more than 3 children and living with a partner, exactly 24% expressed a positive fertility intention. This is more than the Polish women by eight percentage points and more than the Polish men by five percentage points. While in the case of the Polish respondents, it was possible to compute the average number of additional children intended, the same was not possible for Estonian respondents for the

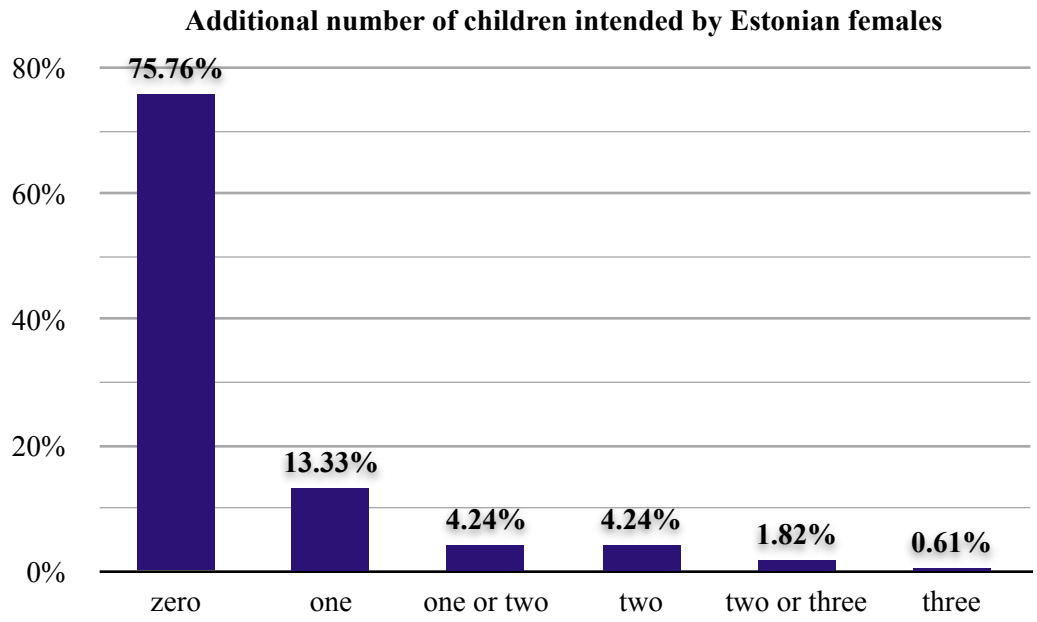
reasons already discussed in Chapter III. Figures 3 and 4 below present the distribution of responses to the question pertaining to the number of additional children intended.

Figure 3 Additional Number of Children Intended by Estonian Females



The majority, namely as much as 76%, of both Estonian males and females does not intend any more children in the future. Slightly more than one in ten women declared that she wants one more additional child, whereas about one in ten female respondents expressed the intention of having “one or two” or “two” children. About equal proportions of the male sample intend “one” or “one or two children,” 8% and 10% respectively. “Two,”,, “two or three” or more children are intended by negligible shares of men.

Figure 4 Additional Number of Children Intended by Estonian Males



Moving on to the gender equity independent variables, as can be seen in Table 15, in 44% percent of the relationships of both men and women, the male partner is involved in performing the domestic duties. As in the case of Polish respondents, there are no significant differences between the sexes in this respect. While it would be desirable to make comparisons for this variable between the two countries, it is impossible to do so. The questions used for the construction of the variable in each case are different. Polish respondents were asked about the division of work for a series of specific domestic chores, whereas Estonian respondents were asked about household work in general.

In contrast to Poland, men and women in Estonia do not differ in their perceptions of gender equity in the family-oriented institutions. Twenty percent of each sex believes that the government policies with respect to reconciling work and motherhood in Estonia over the past ten years have been very efficient or rather efficient. In this case, a direct comparison can be made with the respective results for Poland. As I have indicated, a question pertaining to opinions about the sufficiency of family policies concerning children was also asked of Polish respondents. In the early 2000s, the shares of Polish males and females evaluating them as such were very comparable, namely, 17% for women and 22% for men. However, in the case of Polish respondents, males perceived them to be significantly more gender equal.

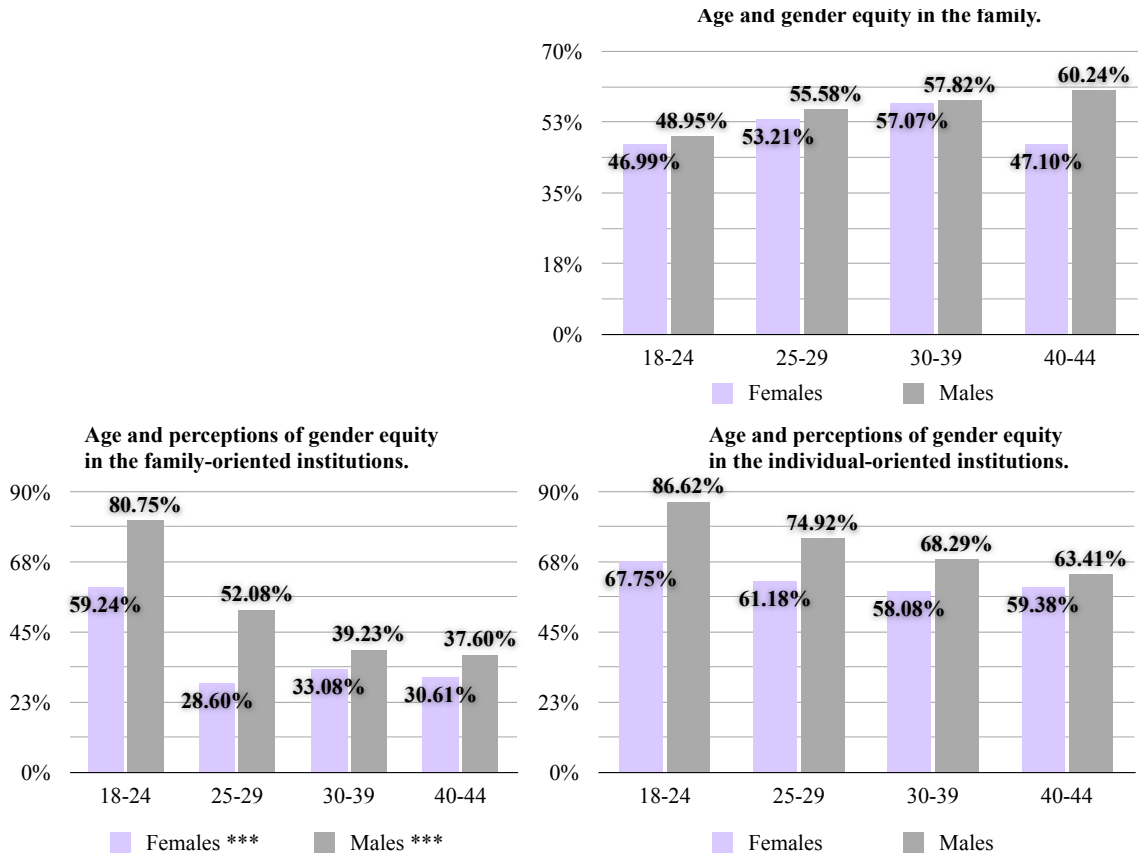
Polish Male and Female Respondents - Tabular Results for the Independent Variables

I now focus on whether and how different are the demographic and socio-economic factors associated with perceptions of gender equity in the family- and individual-oriented institutions and with gender equity in the families of married Polish males and females aged 18-44 with at least 1 but no more than 3 children. For each variable, namely age, number of children, education, household income, place of residence, and the respondent's as well as his or her partner's employment status, significant relationships for each sex are marked in the legend under each chart such that "**" indicates a significant association at .05 and "***" at .01 level. For the associations

concerning gender equity in the family, the least stringent definition is used, i.e., at least 1 task is shared by the partners or done by the male.

Beginning with age, in general research suggests that domestic work tends to be shared more equally among younger couples compared to the relationships of older men and women (Coltrane 2000). It can be seen in Figure 5 that for the Polish women in the sample there is no clear pattern of an increase or decrease in gender equity in the family with age. Among the youngest women aged 18-24, their male partners are involved in domestic work in 47% of the families, and this share increases by 10% up to 57% among women aged 30-39, but then it drops by the same 10% for the oldest age group, i.e., women aged 40-44. The pattern is clearer, though, surprisingly, for men. The share of gender equal families as declared by the male partners increases with age from 49% to 60%. However, the association is not significant for any of the sexes.There are, however, significant differences in regard to perceptions of gender equity in the family-oriented institutions. The older the men and the women, the less often they tend to evaluate these institutions as gender equal. The share of women drops from 59% among the youngest women to 31% among the older women, and the drop is even steeper for men where the corresponding percentages are 81% and 38%. Finally, a similar pattern can be seen for perceptions of gender equity in the individual-oriented institutions; specifically, the shares of men and women evaluating them as gender equal tend to decrease as people age. However, in this case, the association is not significant.

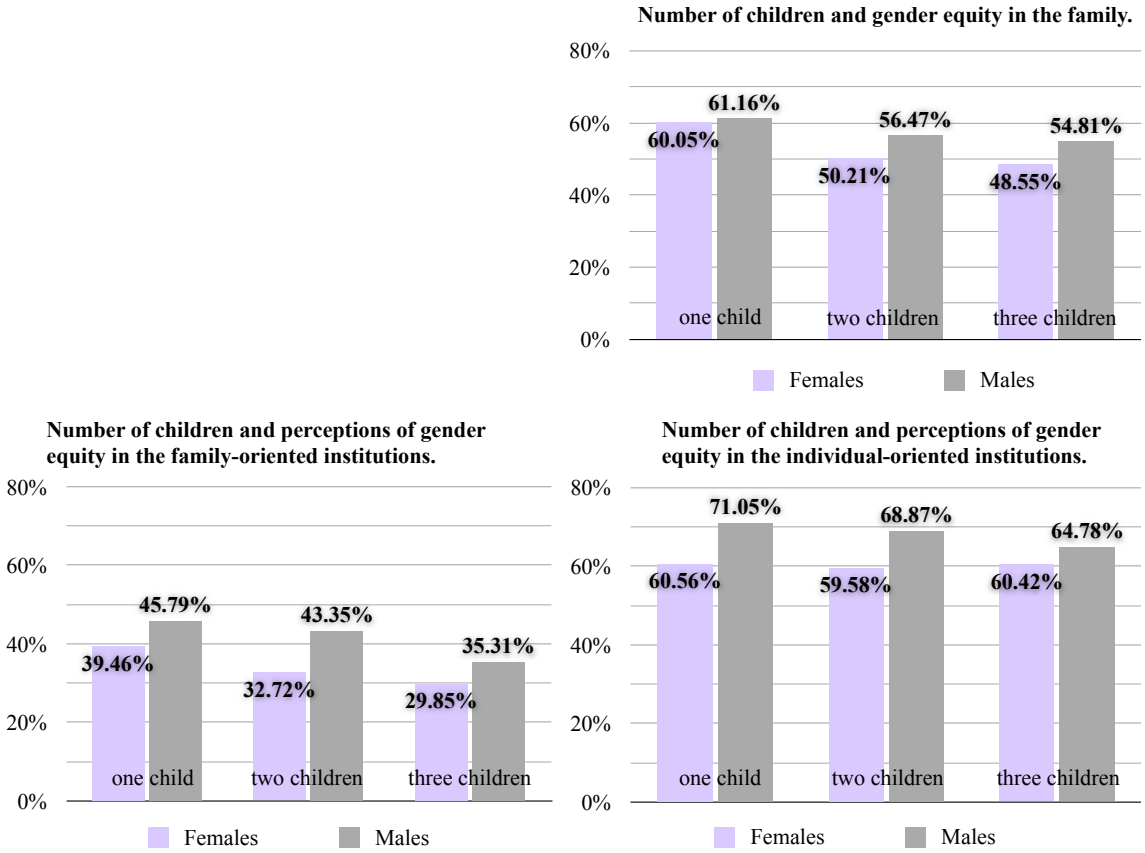
Figure 5 Associations Between Age and Gender Equity in the Family and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents



Moving on to the associations with regard to the number of children, as illustrated in Figure 6, it can be seen that for both men and women there tends to be a fairly gradual decrease in the proportions declaring men's involvement in at least one domestic duty as the number of children increases from one to three. For women, this drop amounts to 11 percentage points, while for men only to six points, but overall for neither of the samples are the differences significant. This general pattern is consistent with previous empirical studies suggesting that the division of domestic work becomes

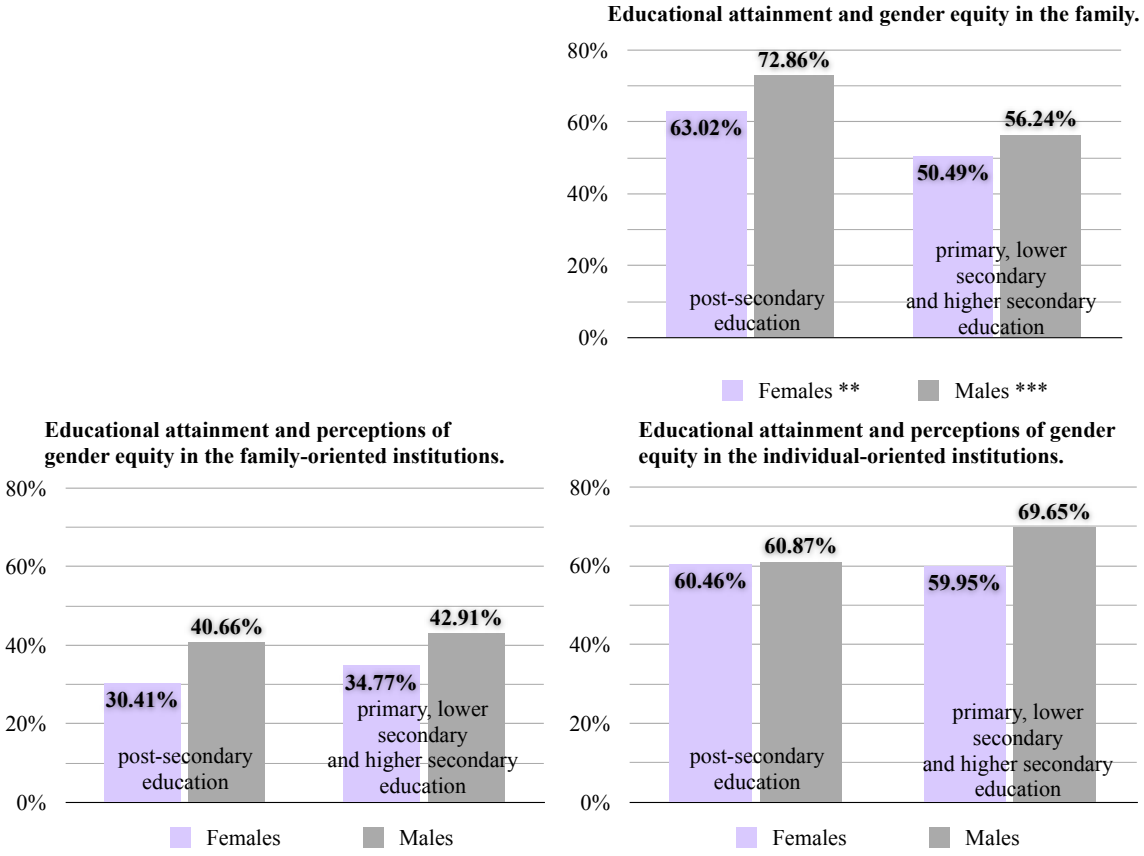
more traditional upon transition to parenthood, and that women's responsibility for domestic duties tends to increase with additional children (Coltrane 2000). Furthermore, no true variation is observed when it comes to perceptions of gender equity in different institutions although the tendency is for those women and men with a higher number of children to perceive these institutions as less gender equal.

Figure 6 Associations Between the Number of Children and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents



Education is the next socioeconomic factor I consider. It has been found that more educated women perform less domestic work, while more such work is done by men with more education (Coltrane 2000). As Figure 7 illustrates, the same significant association is found for the Polish males and females, i.e., education is significantly related to the division of domestic work for both sexes. Among women, those with a post-secondary education tend to have partners more involved in domestic work than females with primary, lower secondary and higher secondary education; the percentages are 63% and 50%, respectively. Among men, the pattern is analogous, i.e., more educated men are more involved in domestic work. The difference between men in both categories is even greater, namely, 73% versus 56%. When it comes to the family- and the individual-oriented institutions, education may be the reason for the difference in their evaluations. Perhaps, it takes some extent of awareness regarding the issues of gender equity, "a problem that has no name" (McDonald 2000b: 429), to be more critical towards them. Indeed, both men and women with less education tend to perceive them to be slightly more gender equal, but, the differences are not significant.

Figure 7 Associations Between Educational Attainment and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents



Research on household labor has also focused on the association between the division of work and earnings, finding that women's higher earnings or more balanced earnings of the partners tend to be associated with a more equal division of work (Coltrane 2000). Unfortunately, as discussed in Chapter III, information about the relative earnings of the partners is not available. Therefore I am able to analyze the specific association with combined household income. I have found no significant associations between the respondent's household income level and any of the aspects of

gender equity. As illustrated in Figure 8, there is really no clear and consistent pattern in the relationships. Among women, the proportions for the two different income categories are almost the same for gender equity in the family, while the shares perceiving gender equity in the family-and individual-oriented institutions are slightly higher for women with a lower monthly household income. The patterns for men resemble those for women with one exception. Among men with lower household income, a lower rather than higher proportion of men appears to evaluate the individual-oriented institutions as gender equal. But again, none of these associations is significant.

Previous work also indicates that women with less traditional gender roles tend to experience more sharing of the domestic work with their partners (Coltrane 2000). I would expect respondents living in large towns to have more modern and egalitarian gender roles attitudes and perhaps be exposed to more gender equal institutions. At the same time, however, men and women living in large urban areas may be more aware of gender issues and the unequal treatment of women. As can be seen in Figure 9, place of residence is a factor that is significantly associated with whether there is gender equity in the families of married Polish females but not with the perceptions of gender equity in different institutions. In the families of women living in a large town, men are significantly more involved in performing the domestic work; 61% of women make such a declaration as compared to 50% of women living in a rural area, small village or small town. Regarding the perceptions of gender equity in different institutions, there are practically no differences between women living in different places. For men from large

towns and the smaller places of residence, the latter tend to evaluate the institutions as slightly more gender equal, but the differences are not significant. Furthermore, in the case of men, there is little if any variation in the division of domestic work and place of residence.

Figure 8 Associations Between Household Income and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents

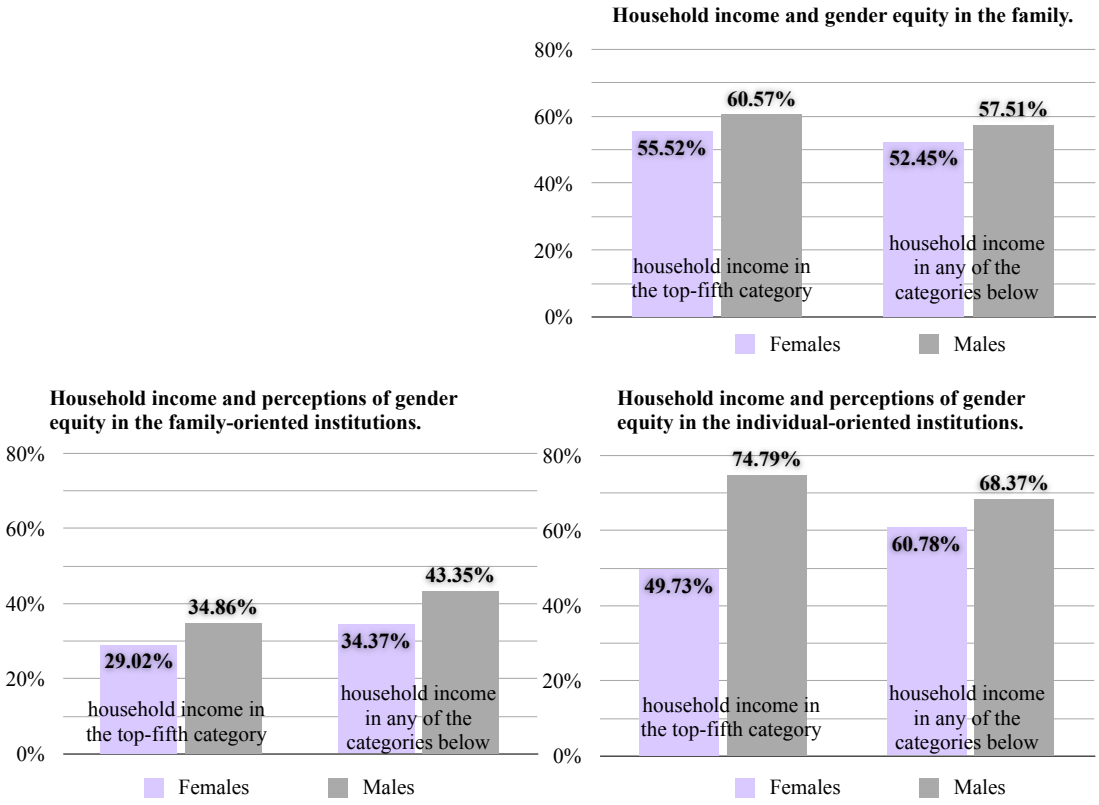
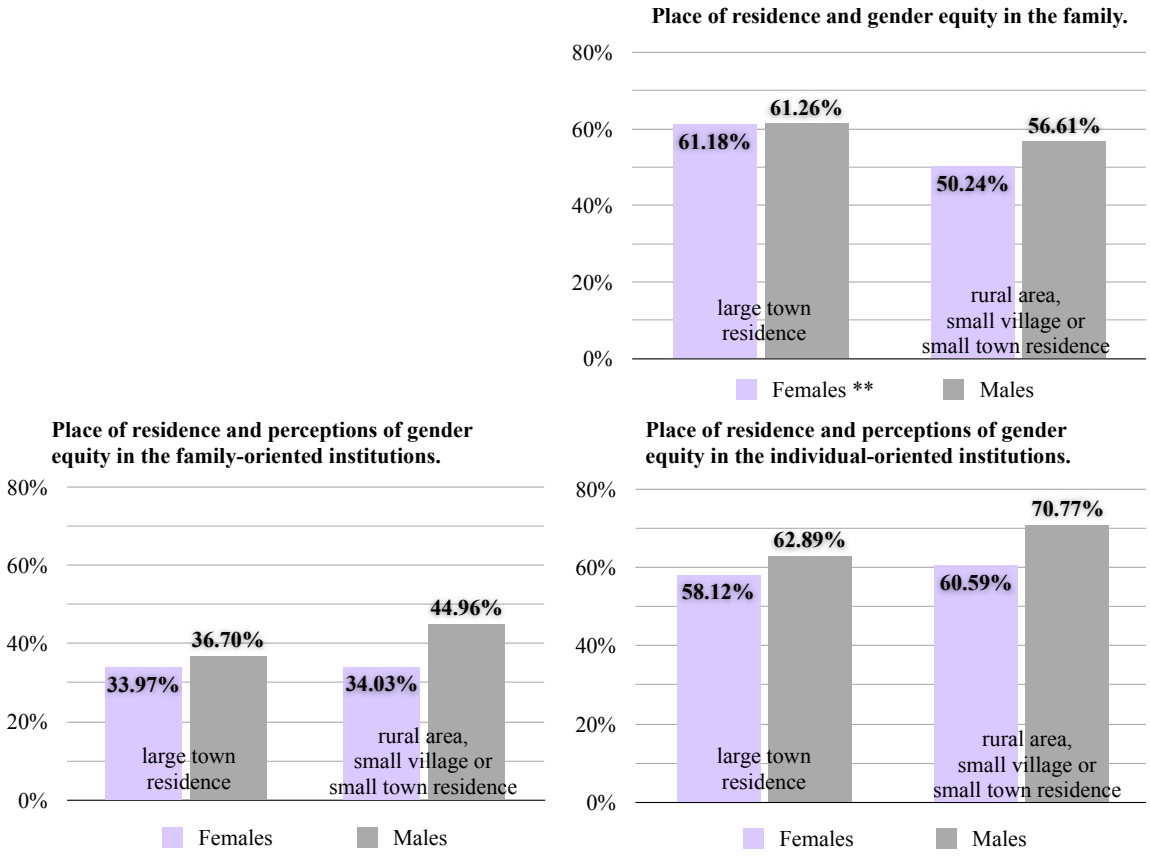


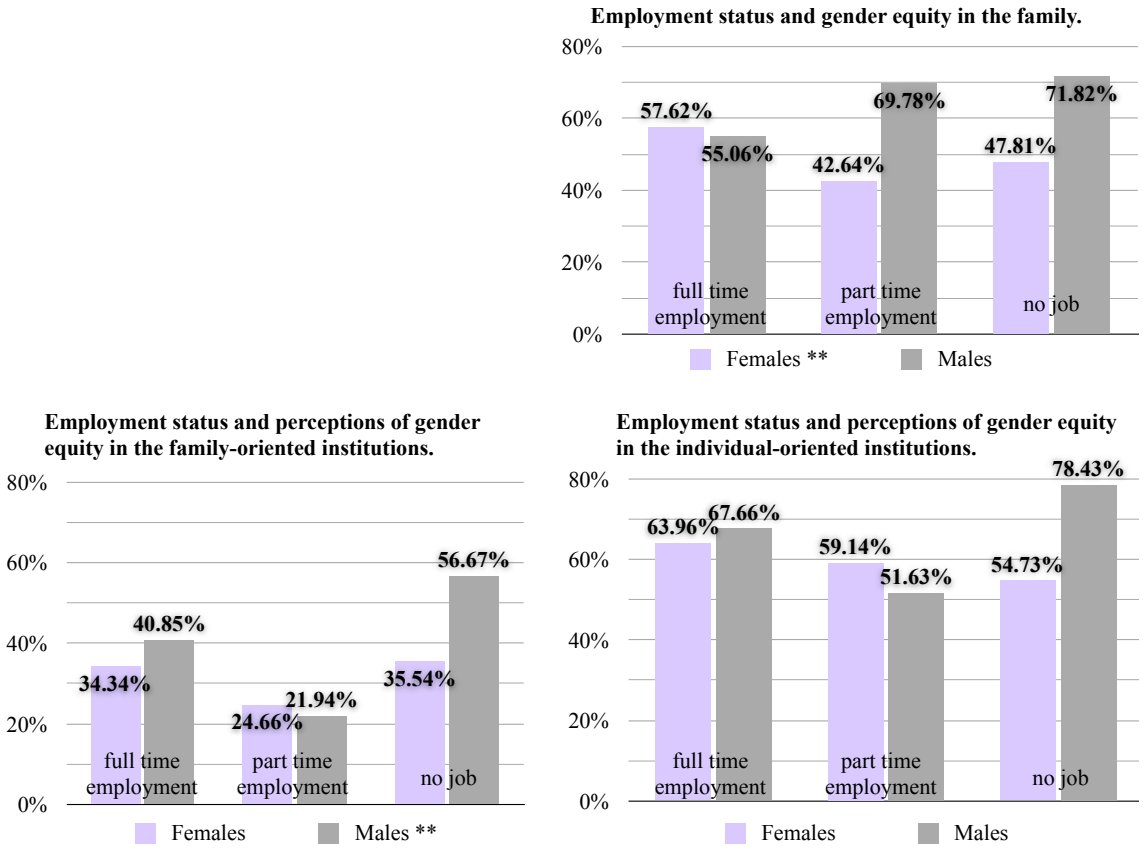
Figure 9 Associations Between Place of Residence and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents



As could be expected, there are significant differences between men and women in regard to the different aspects of gender equity based on their employment status (see Figure 10). Previous studies suggest that the employment of women has a very significant effect on the division of domestic work and the contributions of men to chores at home, while "men's commitment to employment is a weaker and less consistent predictor of household labor than it is for women" (Coltrane 2000: 1220).

Indeed, in my Polish sample, women employed full time have partners significantly more involved in domestic work; the proportion of women in such relationships is 57% as opposed to 43% of women in part time jobs and 48% of those with no jobs. The situation of men is analogous in that those male partners with no jobs tend to be more involved in domestic work compared to those with full time jobs, but the differences are not significant. When it comes to perceptions of gender equity in different institutions, these are statistically the same for women regardless of their employment status. Among men, my data seem to suggest that those with no jobs tend to evaluate the family-oriented but not the individual-oriented institutions as more gender equal.

Figure 10 Associations Between Employment Status and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents



Lastly, whether the respondent's partner is employed full- or part-time or has no job is significantly related to gender equity in the family for men (see Figure 11). Those male respondents with a working partner tend to claim to have a more gender equal arrangement in the family when it comes to domestic work. For women no significant differences are found in this respect. In regard to perceptions, the only significant association found is one that is not exactly intuitive; women who have partners with a

temporary or permanent job tend to perceive more gender equity in the individual oriented institutions, namely 58% of women if their husband has no employment as opposed to 42% of women whose partner has a job.

Figure 11 Associations Between Partner's Employment Status and Gender Equity in the Family, and Perceptions of Gender Equity in the Family- and Individual-oriented Institutions for Polish Male and Female Respondents

To conclude, the tabular results for my independent variables for the Polish respondents suggest that there are several factors significantly related to different aspects

of gender equity for both men and women. For women, their educational attainment, the place of residence, and employment status seem to matter with respect to gender equity in the family. In case of perceptions of gender equity, only age seems to be important when it comes to the family-oriented institutions, while only the employment status of the partner is found to be significant with regard to the individual-oriented institutions. Some of the same, but also some additional associations, have been identified for men. Regarding the family, education and the employment status of the partner have shown significant associations. In case of perceptions, age and the partner's employment status were important for the family-oriented institutions, while for the individual-oriented ones, none of the factors was significant. I now move on to discussing the case of Estonian males and females.

Estonian Male and Female Respondents - Tabular Results for the Independent Variables

In case of Estonia, we have already seen that in contrast to Poland, there are no differences between men and women when it comes to gender equity in the family and the perceptions of gender equity in the family-oriented institutions. In the context of the tabular results for the independent variables, I have found no significant associations for the married and cohabiting Estonian males and females aged 18-44 with at least one but no more than three children. While some of the patterns of the relationships seem to resemble those for Polish respondents, others tend to indicate opposite directions of association. However, again, based on the data for my sample, I cannot conclude that in

the case of Estonian men and women, age, the number of children, educational attainment, household income, marital status, place of residence, employment status or the partner's employment status matter significantly with regard to gender equity in the family and to the perceptions of gender equity in the family-oriented institutions. Table 16 summarizes the proportions of Estonian men and women in gender equal relationships and perceiving gender equity in the family-oriented institutions.

Table 16 Proportions of Estonian Men and Women in Gender Equal Relationships and Perceiving Gender Equity in the Family-oriented Institutions

Demographic and socioeconomic characteristics		Proportions in gender equal relationships		Proportions perceiving gender equity in the family-oriented institutions	
		Females	Males	Females	Males
Age in years					
	18-24	37.5%	0.00%	12.50%	0.00%
	25-29	35.71%	30.43%	21.43%	26.09%
	30-39	41.67%	50.00%	20.24%	16.67%
	40-44	55.56%	45.16%	20.00%	22.58%
Number of children					
	1 child	46.81%	46.15%	21.28%	17.95%
	2 children	41.05%	47.83%	22.11%	23.91%
	3 children	52.17%	33.33%	8.70%	16.67%
Marital status					
	married	47.47%	38.46%	23.23%	21.54%
	cohabiting	39.39%	52.27%	15.15%	18.18%

Table 16 Continued

Demographic and socioeconomic characteristics	Proportions in gender equal relationships		Proportions perceiving gender equity in the family-oriented institutions	
	Females	Males	Females	Males
Educational attainment				
post-secondary education	44.59%	38.71%	18.92%	19.35%
primary, lower secondary and higher secondary education	43.96%	46.15%	20.88%	20.51%
Household income				
household income in the top-fifth category	41.51%	46.67%	24.53%	13.33%
household income in any of the categories below	45.54%	43.04%	17.86%	22.78%
large town residence	31.43%	40.00%	11.43%	13.33%
rural area, small village or small town residence	47.69%	44.68%	22.31%	21.28%
Employment status				
no job	52.27%	42.86%	18.18%	21.43%
part-time employment	36.67%	50.00%	23.33%	25.00%
full-time employment	34.03%	57.14%	21.28%	0.00%
Partner's employment status				
partner employed part- or full-time	43.59%	47.06%	29.51%	20.59%
partner with no job	56.41%	52.94%	79.49%	79.41%

Conclusion

The purpose of this chapter was to provide some descriptive and tabular results for my data on the Polish and Estonian respondents. I have focused on the general

demographic and socioeconomic characteristics of the men and women, as well as the data pertaining to gender equity issues. While I have found some differences between Polish men and women, I have found no differences in gender behavior and perceptions between the Estonian male and female respondents. Lastly, I have reviewed the associations between my independent variables and different factors characterizing the respondents in my samples. In the next chapter I will present and discuss the multivariate results of my two models for the Polish respondents.

CHAPTER V

POLAND: ANALYSES OF GENDER EQUITY AND FERTILITY

In Chapters V and VI I report the results of my analyses of the effects of gender equity on fertility for Poland and Estonia. Both chapters have a similar structure. I have already presented my descriptive results in Chapter IV. Therefore, in this chapter I will focus on the outcomes of the two multivariate models estimated for Polish respondents. Based on the previous literature presented in Chapter II, I hypothesize that there will be a positive effect of gender equity on intended fertility for both men and women, net of the individuals' demographic and socioeconomic characteristics.

In my first model for Poland, I use a dichotomous dependent variable, namely whether or not an individual intends to have another child, i.e., intends a second or higher order birth. Therefore a logistic regression equation is estimated. In my second model for Poland, a count variable of the number of additional children intended is used as the dependent variable. In this case I estimate a count regression model. As already stated, the purpose of extending the empirical examinations to two different dependent variables is to undertake a fuller evaluation of the robustness of McDonald's theory.

When estimating each of the models, I begin by including only my three main independent variables. In the second step, I add the demographic characteristics of the respondents as controls, namely their age, number of children and place of residence. Finally, in the last step, I retain all the previous variables and add the remaining

socioeconomic characteristics of the individuals, namely, their education, household income, employment status and their partners' employment status. My intention in this doctoral research is not to develop an exhaustive model fully explaining fertility intentions. Rather, I want to examine if there is indeed a significant positive relationship between gender equity and intended fertility, net of other factors commonly found as significant predictors of fertility.

When presenting the results of the two core analyses, I begin with an examination of whether there are any differences between men and women with regard to each of my dependent variables. Then, I review the issues of multicollinearity and model diagnostics, as well as other important methodological considerations. I then discuss the outcomes of my main sex-specific models. Later, I devote my attention to comparing the results of models using the family variable based on less and more stringent definitions of equity. I also review the results of models, in which the variable appraising gender equity in the family is constructed exclusively on the basis of the men and women sharing the duties, rather than only on men's involvement in any of them. I then compare the findings for men and women. Lastly, I address the issue of uncertainty pertaining to future fertility discussed in Chapter III. I make comparisons of my main models with analogous models but I remove from the samples the individuals who responded "don't know/I am not sure" to the fertility question.

Results for the Combined Logistic Regression Model

In this section I examine if there are any differences between men and women when it comes to intentions of having another child, i.e., a second or higher order birth. For this purpose, I estimate my model combining the male and female data. I include a dichotomous variable "female" coded one if the respondent is a female. I examine if the effect of the variable is statistically significant because such a result would be the evidence of important differences between the sexes and indicate the need for estimating sex-specific models. The results of this combined model are presented in Table 17.

The table below suggests that the "female" variable does not have a significant coefficient. This indicates that there are in fact no differences between men and women in regard to the intention of having another child in the future. I have nevertheless decided to estimate the sex-specific models because I am also interested in whether any of the key X variables behave differently for men and women. Moreover, I would be able to compare the overall levels of explained variance in the two sex-specific models.

In the next section of this chapter, I will present the results of my sex-specific logistic regression models. These outcomes are preceded by a review of the issues of multicollinearity and model diagnostics.

Table 17 Logistic Regression Equation Estimating the Effects of Gender Equity on the Intention to Have Another Child for the Combined Dataset of Polish Male and Female Respondents

Variables:	Odds ratios	Linearized standard errors
GE in the family - at least 1 task	**2.01*** **	**(0.18)**
GE in family-oriented institutions	**1.03**	**(0.22)**
Ge in individual-oriented institutions	**1.21**	**(0.26)**
Female	**0.72**	**(0.18)**
Age in years	**0.85*** **	**(0.02)**
Number of children	**0.29*** **	**(0.06)**
Large town residence	**0.95**	**(0.22)**
Very religious	**2.28*** **	**(0.49)**
Post-secondary education	**1.14**	**(0.29)**
No job	**ref.**	
Part-time job	**0.24*** **	**(0.13)**
Full-time job	**0.97**	**(0.25)**
Partner employed	**0.87**	**(0.21)**
Household income in top-fifth category	**2.11** **	**(0.65)**

Notes: Sample number of observations =1,055, sample size = 1,110. + p<0.1, * p<0.05, **p<0.01, ***p<0.001. The linearized standard errors are STATA's svy suite of commands' equivalent of robust standard errors.

Methodological Considerations for the Sex-specific Logistic Regression Models

I first assess the extent of multicollinearity between the independent and independent control variables used in the models because multicollinearity can

potentially be problematic for any analysis. As I have discussed in Chapter III, multicollinearity is best detected by calculating the tolerance values for each of the X variables in the model. In case of my data, including all the variables in the model results in very high tolerance values for both sexes. The tolerances are above 0.72 for women and 0.77 for men, meaning that well over 70% of the variation in each of the variables in the models is independent of the other predictors. Thus, I conclude that when estimating my sex-specific models, i.e., both the logistic and count regressions, multicollinearity should pose no major problems.

I now briefly discuss some issues regarding the model diagnostics I have encountered. Unfortunately, when estimating a logistic regression, the options of -predict- in STATA 11 used for computing Pearson residuals and influence statistics such as the change in Pearson $\chi 2$ Statistic and dBeta discussed in Chapter III, cannot be employed with the svy command. Therefore, examining the diagnostics for these models will be undertaken without regard to taking into consideration the issues of survey design.

The analysis of the distribution of Pearson residuals for the male and female models revealed that it did not follow a normal distribution[5]. As mentioned before, this is problematic because if the residuals are not normally distributed, the soundness of the inferential statistics may be undermined. Table 18 presents the values of the skewness and kurtosis statistics for the sex-specific logistic models. For both, and especially for

[5] More specifically a binomial distribution approximates a normal distribution for large samples.

women, they are largely above the conventionally acceptable values of .8 and 10 respectively.

Table 18 Summary Data for the Pearson Residuals for the Unweighted Polish Logistic Models - the Original Models and the Re-estimated Models after Dropping the Cases with $\Delta\chi 2$ Values Greater than 4

Pearson Residuals	No. of observations	Skewness Statistic	Kurtosis Statistic
Females - original model	597	5.30	40.5
Females - re-estimated* model	573	1.01	15.33
Males - original model	458	3.07	16.63
Males - re-estimated* model	440	1.05	7.67

* cases with $\Delta\chi^2$ * values >4 dropped

At the same time, further examination of the influence statistics reveals that 24 female observations and 18 male observations had values of the change in Pearson $\chi 2$ Statistic exceeding 4. This constitutes 4% of the observations in the case of both men and women. Such high values on this diagnostic statistic suggest that the sex-specific models would fit the data better if these observations were deleted. I did inspect these problematic observations but have not found any indication or signs of data entry or coding errors, suggesting that they were all true observations.

Hamilton (2008) suggests that "the most direct way to learn how particular observations affect a regression is to repeat the regression with those observations set aside" (p. 223). Therefore, one can experiment with dropping these cases, re-estimating

the models and inspecting the regression results to see how much the inferences would change were the problematic cases removed..

The results of such an analysis, presented in Table 18, indicate that deleting these observations improved the models quite substantially, namely, the Person residuals in the re-estimated sex-specific models are very close to being normally distributed. The skewness and kurtosis statistics are almost at the conventionally accepted levels. However, the coefficients and t-values from the original and re-estimated models do not change significantly between the models[6]. Both models yield identical results regarding the statistical inferences about the predictors in the model. Although deleting these cases is not justified in any substantive way, this experiment provides me with the necessary foundation for assuming the reliability of the original models' inferential statistics.

Since deleting these cases does not change the conclusions, there is no need to remove the influential observations. I am confident interpreting the results of the original models based on all observations in my samples, irrespective of the skewness and kurtosis statistics of the Pearson residuals' distributions.

I now turn to the discussion of the results of my sex-specific logistic regression models.

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[6] The regression coefficients vary in some cases quite substantially but luckily not as much in case of my key independent variables. If anything, the absolute magnitude of the coefficients increases. Therefore the originally estimated coefficients offer a more conservative test of the importance of my key independent variables.

Results of the Sex-specific Logistic Regression Models

In this section I report the results of the sex-specific logistic regression models predicting the intention to have a second or higher order birth in the future. As discussed in Chapter III, I focus on testing my hypotheses pertaining to gender equity and its positive impact on fertility. More specifically, I hypothesize that after controlling for the various important individual characteristics, men and women in gender equal families and perceiving more gender equity in the family- and individual-oriented institutions, will be more likely to intend to have another child in the future.

As mentioned earlier, I estimate each of my sex-specific models in a few separate steps. I first include only my three main independent variables. In the second step, I add the respondents‘ demographic characteristics. And in the last model I add the socioeconomic characteristics of the men and women. This way of estimating the models allows me to examine whether the potentially significant associations between the measures of gender equity and fertility are maintained after controlling for the other commonly examined predictors of fertility. I maintain a consistent number of cases across the three steps of the model construction, i.e., I include only those observations with no missing values on any of the variables used in the final full model.

I mentioned in Chapter III that there are a number of ways in which the results of the logistic regression equation may be interpreted. I have decided to use the exponentiated logit coefficients, i.e., the odds ratios. Furthermore, I also discuss the results in terms of percent change in the odds ratio. This is calculated by multiplying by

one hundred the value of the odds ratio minus one. The sex-specific results presented in Tables 19 and 20 below report the odds ratios.

Table 19 Logistic Regression Results for Married Polish Females Aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - at least 1 task	1.74*	(0.42)	1.88*	(0.54)	1.83*	(0.55)
GE in family-oriented institutions	1.45	(0.36)	1.08	(0.32)	1.03	(0.30)
Ge in individual-oriented institutions	1.17	(0.29)	1.22	(0.35)	1.29	(0.38)
Age in years			0.85***	(0.02)	0.82***	(0.03)
Number of children			0.29***	(0.08)	0.28***	(0.08)
Large town residence			0.85	(0.26)	0.98	(0.32)
Very religious					2.46**	(0.78)
Post-secondary education					0.95	(0.32)
No job					ref.	
Part-time job					0.19**	(0.12)
Full-time job					1.24	(0.41)
Partner employed					0.67	(0.25)
Household income in top-fifth category					2.18+	(0.97)

Notes: Sample number of observations=597, odds ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Table 20 Logistic Regression Results for Married Polish Males Aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - at least 1 task	1.92*	(0.53)	2.03*	(0.62)	2.11*	(0.67)
GE in family-oriented institutions	1.47	(0.40)	1.10	(0.34)	1.04	(0.33)
GE in individual-oriented institutions	1.24	(0.37)	1.10	(0.34)	1.09	(0.35)
Age in years			0.88***	(0.02)	0.88***	(0.02)
Number of children			0.33***	(0.10)	0.30***	(0.10)
Large town residence			1.07	(0.32)	0.96	(0.32)
Very religious					2.16**	(0.64)
Post-secondary education					1.42	(0.59)
No job					ref.	
Part-time job					0.46	(0.59)
Full-time job					0.90	(0.41)
Partner employed					0.94	(0.29)
Household income in top-fifth category					1.99	(0.86)

Notes: Sample number of observations=458, odds ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Firstly, in the tables for both men and women we see that the statistical inferences of the main X variables in the first step, i.e., the model including only the gender equity measures, and in the last step, i.e., the model including the independent

variables as well as the demographic and socioeconomic characteristics used as controls, are the same.

The only significant variable from the first step in both of the sex-specific models, namely gender equity in the family, maintains its significance even after all of the independent control variables are added. This suggests that the significant effect of this key theoretical variable on the intention to have another child in the future cannot be explained away by the various other characteristics of the male and female respondents.

In case of women, consistent with my hypothesis, the results of the logistic regression model suggest that gender equity in the family is positively associated with fertility intentions. A woman who shares at least one of the five feminine domestic tasks with her partner, or whose partner takes care of at least one of these chores himself (preparing meals, cleaning, shopping, washing the dishes and laundry), is more likely to intend to have another child. This result may be compared to a woman in a partnership characterized by a more traditional organization of household work. The odds of a woman with a partner committed to performing even some minimal amount of domestic work to express an intention to have another child in the future are multiplied by 1.83 or they are 83% higher ($p<0.05$).

When it comes to the male respondents, also consistent with my hypothesis, a man who participates in carrying out domestic work either by sharing it with his partner or being himself responsible for at least one household chore is more likely to intend to have another child in the future than a man with no domestic work responsibilities. In

fact, the odds of having positive fertility intentions are over twice higher for men committed to some domestic work. More precisely, they are 111% higher ($p<0.05$).

The other two of my key independent variables, namely gender equity in the family- and individual-oriented institutions consistently show no significant association with intended fertility across the three steps of the sex-specific regression models. There is thus no support for my other two hypotheses. The results suggest that men and women who perceive family-oriented institutions to be more gender equal and who find individual-oriented institutions not to be gender biased are equally likely to intend to have another child as are individuals for whom there is gender inequity in either kind of institutions.

Results for Other Operationalizations of Gender Equity in the Family

The sex-specific models presented above use the least stringent definition of gender equity in the family, i.e., a man's contribution to as little as one domestic chore. Table 21 below presents the results of modeling fertility intentions with an increasingly more stringent definition of gender equity in the family. It is assumed that a gender equal organization of household work requires the involvement of the male partner in at least two, three, four, or five tasks, either through sharing the work or being exclusively responsible for it. Firstly, the coefficients in Table 21 present the results for when only the three independent variables are included in the models, i.e., none of the control variables are accounted for. For females, the measure operationalized as men's involvement in at least two tasks or more, three tasks or more, and so on is not

statistically significant even in these simple models. In the case of males, similar to women, in the simple models the odds ratios are not significant for the operationalization based on men's involvement in at least two tasks or more and so on. Secondly, the other results in Table 21 pertain to the full models. The measure operationalized as men's involvement in all five tasks, i.e., the most stringent operationalizations of gender equity, is close to being significant (p=0.074) in the full model for males. Also, the magnitude of the odds ratio is greater than in the main male model estimated above, which differentiates between men not committed to housework at all and those with even some minimal responsibilities. For women, no significant differences associated with the extent of men's involvement are observed. I further discuss the findings revealed by Table 21 in the concluding chapter of this dissertation.

Table 21 Tests of Various Operationalizations of Gender Equity in the Family Measure in the Polish Sex-specific Logistic Regression Models

Man's involvement in	**at least 2 tasks**	**at least 3 tasks**	**at least 4 tasks**	**all 5 tasks**
Females				
Independent variables only	1.17* (0.530)	0.90 (0.699)	0.91 (0.799)	0.86 (0.723)
Full model with control variables	1.10 (0.742)	0.88 (0.715)	0.95 (0.907)	1.08 (0.876)
Males				
Independent variables only	1.44 (0.158)	1.21 (0.506)	1.40 (0.302)	1.82 (0.116)
Full model with control variables	1.39 (0.290)	1.16 (0.669)	1.38 (0.417)	2.42^{+} (0.074)

Notes: Odds ratios reported. T-values in parentheses. $^{+}$p<0.1, ∗p<0.05, ∗∗p<0.01, ∗∗∗p<0.001.

Furthermore, in Chapter III, I stated that for the sake of thoroughness I would replicate the results of my main sex-specific models and estimate regressions, in which the gender equity in the family variable is constructed exclusively on the basis of the men and women sharing the duties, i.e., at least one of the five tasks is usually performed by the respondent together with his or her partner. Table 22 below presents the odds ratios for my three independent variables as yielded by the full models identical in all other aspects as the models originally estimated.

Table 22 The Polish Sex-specific Logistic Regression Models Using the Gender Equity in the Family Variable Constructed Exclusively on the Basis of the Men and Women Sharing the Duties

Model/Variable	GE in the family - at least 1 task shared	GE in family-oriented institutions	GE in individual-oriented institutions
Females	2.02* (0.017)	1.09 (0.784)	1.25(0.450)
Males	1.89* (0.042)	1.05 (0.877)	1.04(0.907)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

As can be seen in the Table above, the conclusions based on these models are exactly the same as those of the original sex-specific logistic regression models. Both suggest that it is gender equity in the family rather than in other societal institutions that matters with regard to predicting the intention of having another child. Both men and women in more gender equal families as defined in the original models and models presented in Table 22 tend to be more likely to express a positive fertility intention pertaining to a second or higher order birth.

Males Versus Females

After estimating the sex-specific logistic regression models, I now evaluate whether the effects of gender equity in the family on fertility intentions are significantly different between males and females. For this purpose, I use the statistical test for the equality of regression coefficients discussed in Chapter III. The formula below is employed:

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}. \quad (6)$$

The results of the test suggest that these effects are not significantly different, z=0.32. This indicates that, although the paths through which gender equity in the family might work for males and females are somewhat different, the size of the effects is the same. This issue is further discussed in the concluding chapter of this dissertation.

The Uncertainty of Fertility Intentions

Finally, as mentioned in Chapter III, after undertaking some preliminary analyses I decided it was reasonable to combine men and women responding "don't know/I am not sure" about having another child in the future with those with the categorical "no" response. As a result, both were treated in the models estimated above as intending no additional children. This was the only way through which I could avoid removing numerous cases from the analyses. Below in Table 23, for the purpose of comparison, I present the results of the same main sex-specific models, which I estimated this time without the individuals who responded "don't know/I am not sure" to the fertility

question. I report the results only for my independent variables, but these are from the full models including all of the demographic and socioeconomic individual characteristics used as controls.

Table 23 The Sex-specific Logistic Regression Results Based on Samples Excluding Polish Respondents Uncertain about their Future Fertility

Model/Variable	GE in the family - at least 1 task	GE in family-oriented institutions	GE in individual-oriented institutions
Females	1.80* (0.050)	1.59 (0.221)	1.30 (0.435)
Males	1.76 (0.122)	1.11 (0.762)	1.19 (0.612)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$. sample number of observations for females=443; sample number of observations for males=350

For this analysis the size of the sample for women is reduced by 154 cases, while for men 108 observations are removed from the original sample. As can be seen, the conclusions based on the analysis for all respondents, i.e., including the men and women who expressed uncertainty about their future fertility, are not perfectly consistent with the results produced by the models excluding such individuals. For women, as in the previous model, gender equity in the family continues to have a marginally positive effect on intended fertility, while the other two independent variables remain insignificant. In contrast, in the case of men, the gender equity in the family variable looses its significance in the model based on the reduced sample. No differences are observed for perceptions about gender equity in the institutions; also in the case of this

estimation they are found to have no effect on the fertility intention of having another child.

The analysis above suggests that it does make a difference to men, but not to women, whether we include in the analysis those responding "don't know/I am not sure" to the fertility question and treat them as intending no second or higher order birth. These conceptual and methodological issues and their somewhat different results for males need to be kept in mind in future analyses of equity and fertility intentions.

Having discussed the logistic regression model, I now move to my presentation of the results for my model specifically designed for count outcomes. I have used this second estimation technique to analyze the count variable of the number of additional children intended.

Results for the Combined Count Regression Model

As with the logistic regression model, in this section I examine if there are any differences between men and women pertaining to the number of additional children they intend for the future. Once again I conduct my analysis on a combined male and female sample and examine if the dichotomous variable "female" is statistically significant. The results of this combined model are presented in Table 24.

According to the regression results in the table below, the "female" variable is marginally significant, $p=0.054$. This indicates that we might expect some differences between men and women with respect to the number of additional children intended in the future. Therefore, once again I estimate the sex-specific count regression models and

later examine the differences between the sex-specific equations. In the next section of this chapter I discuss some methodological issues of my count regression. I then move on to presenting the results of my sex-specific models.

Table 24 Negative Binomial Regression Equation Estimating the Effects of Gender Equity on the Number of Additional Children Intended for the Combined Dataset of Polish Male and Female Respondents

Variables:		
	Incidence rate ratios	**Linearized standard errors**
GE in the family - at least 1 task	**1.77*** **	**(0.31)**
GE in family-oriented institutions	**1.15**	**(0.18)**
Ge in individual-oriented institutions	**0.97**	**(0.16)**
Female	**0.69^{+}**	**(0.13)**
Age in years	**0.87*** **	**(0.01)**
Number of children	**0.53*** **	**(0.10)**
Large town residence	**1.16**	**(0.22)**
Very religious	**1.73*** **	**(0.27)**
Post-secondary education	**1.02**	**(0.19)**
No job	**ref.**	
Part-time job	**0.24*** **	**(0.13)**
Full-time job	**0.88**	**(0.17)**
Partner employed	**0.32***	**(0.15)**
Household income in top-fifth category	**1.66***	**(0.36)**

Notes: Sample number of observations =1,051, sample size = 1,106 Incidence rate ratios reported. $^{+}$p<0.1. ∗p<0.05. ∗∗p<0.01. ∗∗∗p<0.001.

Methodological Considerations for the Sex-specific Count Regression Models

Earlier in this chapter, I reviewed the issues of multicollinearity in the context of my logistic regression models. My conclusion that it does not pose a problem for my analyses holds also in the case of the sex-specific count regressions. Although the dependent variable used in both equations is different, the same independent and independent control variables are employed, so my earlier discussion and presentation regarding multicollinearity are unchanged.

As indicated in Chapter III, a count dependent variable can be modeled with the Poisson regression or with the negative binomial regression (NBR), among other models. The choice of the appropriate approach depends on the extent of overdispersion in the distribution of the count variable. In cases, where overdispersion is encountered, the NBR is the statistically proper way to conduct the analysis. The second important consideration with count models is associated with the problem of a large number of zeros in the count data and the fact that these zeros might be generated by two separate processes.

This latter situation does not concern me, since, as already discussed, with my data my zero cases refer only to persons who are voluntarily childlessness, i.e., those choosing not to have any children rather than being incapable of having any. When it came to deciding between a Poisson regression and NBR, I have encountered a problem. STATA would not report the value of the likelihood ratio chi-square test of alpha and its probability value, when the svy suite of commands was used. Under these

circumstances, I ran both of my sex-specific models ignoring the survey design and examined the statistics. Second of all, I estimated for both men and women the two models, namely the Poisson regression and the NBR, both accounting for my data's survey design and then compared the coefficients estimated in each way. The results of both these tests led me to conclude that the NBR model is more appropriate and fits my data better for both men and women.

Results of the Sex-specific Count Regression Models

In this section I present and discuss the results of the sex-specific negative binomial regression models using the number of additional children intended as the dependent variable. As stated in Chapter III, I decided to interpret my NBR results using the incidence rate ratios (IRR), which are obtained by exponentiating the coefficients.

The results for women reported in Table 25 are quite similar to those in Table 20 for the logistic regression model with one exception. In step one of the NBR model the data suggest that positive perceptions of gender equity in the family-oriented institutions increase the number of additional children intended. However, this independent variable loses its significance once the demographic and socioeconomic characteristics of the women are included in the analysis in steps two and three. This means that this positive association is accounted for when all my independent control variables are incorporated in the model.

Table 25 Negative Binomial Regression Results for Married Polish Females Aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - at least 1 task	1.88**	(0.42)	1.86**	(0.41)	1.84**	(0.41)
GE in family-oriented institutions	1.82**	(0.41)	1.36	(0.31)	1.29	(0.28)
Ge in individual-oriented institutions	0.88	(0.20)	0.91	(0.18)	1.01	(0.21)
Age in years			0.87***	(0.02)	0.86***	(0.02)
Number of children			0.52*	(0.08)	0.53*	(0.14)
Large town residence			0.96	(0.22)	1.04	(0.25)
Very religious					1.78**	(0.38)
Post-secondary education					1.02	(0.25)
No job					ref.	
Part-time job					0.22**	(0.11)
Full-time job					0.92	(0.23)
Partner employed					0.83	(0.24)
Household income in top-fifth category					1.87*	(0.53)

Notes: Sample number of observations=594, incidence rate ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Table 26 Negative Binomial Regression Results for Married Polish Males Aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - at least 1 task	**1.63+**	**(0.42)**	**1.65+**	**(0.45)**	**1.65+**	**(0.45)**
GE in family-oriented institutions	**1.28**	**(0.31)**	**1.07**	**(0.26)**	**1.02**	**(0.23)**
Ge in individual-oriented institutions	**1.04**	**(0.28)**	**0.97**	**(0.24)**	**0.93**	**(0.25)**
Age in years			**0.89*****	**(0.02)**	**0.89*****	**(0.02)**
Number of children			**0.56+**	**(0.18)**	**0.53***	**(0.15)**
Large town residence			**1.35**	**(0.35)**	**1.34**	**(0.40)**
Very religious					**1.69***	**(0.41)**
Post-secondary education					**0.96**	**(0.27)**
No job					**ref.**	
Part-time job					**0.87**	**(0.84)**
Full-time job					**0.84**	**(0.29)**
Partner employed					**0.89**	**(0.24)**
Household income in top-fifth category					**1.56***	**(0.50)**

Notes: Sample number of observations=457, incidence rate ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Similar to the results in Table 20, no significant relationship is found between gender equity in the individual-oriented institutions and the number of additional children intended in the future.

Furthermore, the conclusions about the impact of gender equity in the family is the same as in the earlier analysis. Consistent with the hypothesis pertaining to gender equity in the family, the results of the negative binomial regression model indicate that it increases the number of additional children women intend to have in the future. A woman who shares at least one of the five feminine domestic tasks with her partner or whose partner takes care of at least one of these chores himself intends to have 84% more additional children in the future, and this finding is highly significant ($p<0.01$).

The results for men reported above in Table 26 differ compared to the findings presented in Table 20. When it comes to the effect of gender equity in different institutions, the conclusions do not change. Once again I have found that it has no association with the number of additional children intended. The difference concerns the impact of gender equity in the family. While this variable has been shown to have a positive effect on whether or not a man intends to have another child in the future, in case of the number of additional children intended, this independent variable is not significant at the $p<0.05$ level. Its incidence rate ratio with a p value of 0.065 approaches significance but can only be identified as having an impact at the $p<0.1$ level. This finding is in line with my hypothesis but the support for it is very weak.

Results for Other Operationalizations of Gender Equity in the Family

In the sex-specific models presented above, the least stringent definition of gender equity in the family, i.e., a man's contribution to as little as one domestic chore, has been used. Similarly to my analysis of the intention to have another child in the

future, with the NBR model I have also examined the effects of using the increasingly more stringent definitions of gender equity in the family. These results are presented in Table 27.

Among women, similar to the results reported earlier, the measure based on the definition requiring men's involvement in at least two tasks, or even more, is not statistically significant even in the simple models. This suggests that the only significant difference is found between women in families with an extremely traditional gender role division at home and those with a male partner who is at least minimally committed to domestic work. At the same time, the extent to which the men are involved seems not to matter.

Table 27 Tests of Various Operationalizations of Gender Equity in the Family Measure in the Polish Sex-specific Count Regression Models

Man's involvement in	at least 2 tasks	at least 3 tasks	at least 4 tasks	all 5 tasks
Females				
Independent variables only	1.24 (0.358)	1.04 (0.895)	1.17 (0.656)	1.35 (0.486)
Full model with control variables	1.21 (0.416)	1.16 (0.619)	1.38 (0.372)	1.79 (0.143)
Males				
Independent variables only	1.30 (0.257)	1.25 (0.417)	1.46 (0.203)	1.73 (0.115)
Full model with control variables	1.27 (0.334)	1.34 (0.349)	1.61 (0.154)	2.32* (0.030)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

In the case of men, the findings are different. In none of the simple models are the odds ratios significant for the operationalization based on men's involvement in at least two tasks or more. However, the measure based on the most stringent operationalization of gender equity, i.e., men's involvement in all five feminine domestic tasks, becomes significant in the full model (p=0.036). This suggests that only men fully committed to domestic work intend to have more children than men less involved or not performing any of the work at all; these men intend to have 132% more children in the future. Also the incidence rate ratio of 2.32 is substantially higher than the marginally significant rate of 1.65 for the original operationalization of the variable.

I now move to a discussion of the results of the models in which I replicate my main analysis above but use gender equity in the family variable constructed exclusively on the basis of the men and women sharing the duties (see Table 28).

Table 28 The Polish Sex-specific Count Regression Models Using the Gender Equity in the Family Variable Constructed Exclusively on the Basis of the Men and Women Sharing the Duties

Model/Variable	GE in the family - at least 1 task shared	GE in family-oriented institutions	GE in individual-oriented institutions
Females	1.93** (0.003)	1.35 (0.170)	0.96 (0.855)
Males	1.73* (0.036)	1.05 (0.823)	0.88 (0.635)

Notes: Incidence rate ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

Unlike the case of the sex-specific logistic regression, the results obtained with operationalizing gender equity in the family this way differ slightly from the ones

produced by my main sex-specific count regression models. For women the conclusions in both cases are identical, namely, that it is gender equity in the family rather than in other societal institutions that increases the number of additional children intended. The incidence rate ratios for the significant independent variable is slightly higher in the replicated model compared to the original analysis, 1.93 versus 1.84.

The difference produced by the two alternative operationalizations concerns men. In the original count regression model for males the effect of gender equity in the family was significant only at the 0.1 level ($p=0.065$). In the replicated model focusing on the sharing of tasks by the partners, this same independent variable is significant, $p=0.036$. When at least one of the feminine domestic tasks is shared by the partners, the number of additional children intended by men is increased by 73%.

I will now compare the results of the count regression models obtained for men and women.

Males Versus Females

As we have already seen in the discussion of the sex-specific count regression models, the results pertaining to gender equity in the family- and individual-oriented institutions are the same for men and women; the effect of this explanatory variable does not seem to matter when predicting their fertility intentions. In regard to gender equity in the family, its effect has been found to be highly significant for women and only approaching the conventional significance level in case of men. Since this is the

case, I am not that interested in comparing the magnitudes of the sex-specific coefficients.

The Uncertainty of Fertility Intentions

The problematic issue of uncertainty of fertility intentions is the final aspect of my analyses that I will address in this chapter. In Table 29 I present the results of my sex-specific count regression models run on the samples restricted to respondents having either firm positive or negative fertility intentions. Although I report the effects only for my main independent variables, these are the outcomes obtained from the full models.

Table 29 The Sex-specific Count Regression Results Based on Samples Excluding Polish Respondents Uncertain about their Future Fertility

Model/Variable	GE in the family - at least 1 task	GE in family-oriented institutions	GE in individual-oriented institutions
Females	1.59* (0.014)	1.32 (0.109)	1.05 (0.780)
Males	1.40 (0.176)	1.01 (0.978)	0.98 (0.929)

Notes: Incidence rate ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$. sample number of observations for females=440; sample number of observations for males=349

These results suggest that for women the conclusions based on the analysis for the whole subsample of respondents and after eliminating females expressing uncertainty about their future fertility are fully consistent. Gender equity in the family maintains its significant positive effect on the number of additional children intended (p=0.014), although the magnitude of the incidence rate ratio decreases slightly; the

number of children is increased by 59% rather than 88%. The other two independent variables remain insignificant.

Once again the difference between the models estimated with the two different samples concerns men. In the case of the full sample the effect of gender equity in the family was marginally significant. However, the coefficient's probability value rises above the 0.1 level when the group of respondents with uncertain fertility intentions is removed[7] from the analysis. No differences between the full and reduced samples are observed for perceptions of gender equity in the family- and individual-oriented institutions.

Once again this additional analysis suggests that including those responding "don't know/I am not sure" to the fertility question and treating them as intending no additional children in the future makes a difference for men but not women.

Conclusion

In this chapter I examined statistically the effects of gender equity in the family, as well as family- and individual-oriented institutions on Polish men' and women's fertility intentions. I presented the results of two series of sex-specific models, namely, the logistic regression using a dichotomous dependent variable of whether or not an individual intends to have a second or higher order birth in the future, and the count regression using as the dependent variable the number of additional children intended.

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[7] For the reduced sample, it continues to be marginally significant at 0.1 level for the operationalization of gender equity in the family based on the most stringent definition of equity (for the full sample it was highly significant for such an operationalization).

My objective was to evaluate whether gender equity, as implied by McDonald's theory, would be associated with higher fertility in Poland.

Across all the models discussed, I have found no support for my hypotheses pertaining to gender equity in the family- and individual-oriented institutions. Only for women and in regard to the number of additional children intended the perceptions of gender equity in the family-oriented institutions had a significant positive effect in the simple model including just the independent variables. However, this effect was fully explained away by the control variables; its effect became insignificant after all the independent control variables were included in the analysis. Therefore, in general the results of my study suggest that neither Polish men nor women perceiving relatively high levels of gender equity in the family- or individual-oriented institutions are more likely to have higher fertility intentions.

The most interesting findings for Polish men and women pertain to the effects of gender equity in the family. In general, I have found solid and consistent support for my hypothesis that men and women in partnerships, where the man is involved in at least some or all of the domestic chores, are more likely to have higher fertility intentions net of other demographic and socioeconomic characteristics. In both of the models for women, gender equity in the family had a consistently positive effect as a predictor of intended fertility. It was shown to significantly increase the likelihood of a woman intending a second or higher order birth by 83% and the number of additional children intended by 84%.

The findings for men were somewhat less consistent across the two models. In regard to both dependent variables, gender equity in the family worked in the hypothesized direction, i.e., it predicted higher fertility. The effect of increasing the probability of a man intending a second or higher order birth by 111% was very significant. At the same time, however, the effect of increasing the number of additional children intended by 65% was not found to be significant at the $p>0.05$ level. Nevertheless it was approaching significance with a p value of 0.065 and thus it can be considered as a significant predictor at the $p>0.1$ level.

In general, I would say that the evidence supporting my hypothesis pertaining to gender equity in the family is stronger in the case of Polish women than men. On the other hand, the results of the formal statistical test of the equality of the regression coefficients seem to indicate that there is no difference between the magnitudes of the sex-specific logistic regression coefficients for the family variable. This would suggest that when it comes to the intention of having another child in the future, the likelihood of a positive fertility intention is increased to the same extent for men and women. In regard to the number of additional children intended, I was not as much interested in comparing the magnitude of the relevant coefficients, as already their probability levels implied that gender equity in the family was only marginally significant in this respect for males and highly significant for females.

In this chapter, I have also discussed the results of using different operationalizations of the gender equity in the family variable, each based on less or

more stringent definition of equity. I have found that for women, in both models, the only significant difference with regard to predicting intended fertility was among women with partners taking on no responsibility for domestic work and those sharing at least some of these duties with their partners. On the other hand, the extent of men's involvement, i.e., whether it was one, two, three or more tasks had no importance.

The situation was slightly different for men. I found that in the case of both models there was at least a marginally significant difference between traditional men with no domestic responsibilities and those involved, even minimally, in these chores. However, I also found that there was an even greater difference, as indicated by the larger magnitudes of the odds and incidence rate ratios, between men fully committed to all five traditionally feminine domestic chores and those less involved or not involved at all. This latter effect was marginally significant for the intention to have another child and highly significant for the number of additional children intended.

In the context of the discussion of the different operationalizations of the gender equity in the family variable, I also reviewed another issue. Equality in the couple might be more commonly associated with sharing the duties by the men and women. Therefore, for the sake of thoroughness, I also presented the results of models in which the gender equity in the family variable was constructed exclusively on the basis of the men and women sharing the duties. These results have been for the most part consistent with the findings of my main sex-specific models and led me to the same conclusions about the effects of gender equity in the family on fertility intentions. The one exception,

however, was the finding for men in case of the number of additional children intended. While in the main model, the effect of this independent variable was approaching significance at the $p<0.5$ level, in the analysis using the alternative operationalization, it became significant. Nevertheless, I believe this discrepancy can be considered minor and thus I would argue that the conclusions based on the two models are very similar, if not the same.

Finally, I have addressed the issue of uncertainty of fertility intentions. For the purpose of my main sex-specific analyses presented in this chapter, I combined the individuals responding "don't know/I am not sure" to the fertility question with men and women expressing negative fertility intentions for the future. This decision followed a preliminary analysis discussed earlier in Chapter III, which compared these two groups in regard to the independent variables. Since there were no significant differences, I considered it reasonable to treat those uncertain individuals as those intending no more children rather than excluding from the analysis 26% of the female and 24% of the male respondents. However, I have replicated my main sex-specific models for both dependent variables for these largely reduced samples of Polish men and women. In the case of women, the results of these analyses were consistent with the conclusions derived earlier from models using the whole sample. In contrast, there was no such consistency for men. With the reduced samples, the effects of gender equity in the family were no longer significant for any of the two dependent variables. However, it should be remembered that the reduced sample was substantially smaller than the one in the

original analysis. Additionally, there were no differences pertaining to my independent variables between respondents claiming that they intend no further children and those uncertain about their future fertility. But there was significantly less traditional gendering of the division of domestic work among those men with positive fertility plans for the future compared to men not yet certain. Therefore, I would argue that combining the two groups of respondents as was done in the main models discussed in this chapter is justified and that the results of the results of these regressions should be considered valid.

In the next chapter I present the results of similar analyses for Estonian men and women. I also include a discussion of some methodological issues pertaining to the estimated models. Furthermore, I review the findings based on an alternative operationalization of one of the independent variables as well as the estimates from models computed for samples excluding those individuals with uncertain future fertility intentions.

CHAPTER VI

ESTONIA: ANALYSES OF GENDER EQUITY AND FERTILITY

Having discussed the results of my analyses for Poland in the preceding chapter, I turn now to a discussion of the results of the hypothesis tests from my two multivariate models that I have estimated for Estonian males and females. As was the case for Poland, I expect that there should be a positive association between gender equity and intended fertility for both men and women. A major difference in the hypothesis tests in this chapter is that I am lacking a variable capturing gender equity in the individual-oriented institutions in Estonia. However, it is recalled that the results of the analyses discussed in the previous chapter indicated that this aspect of gender equity had no significant effect in any of the Polish sex-specific models. Therefore, I believe that lacking this variable in the Estonian models should not be considered a substantial omission.

My first model for Estonia is identical as the first one for Poland. It is the logistic regression using the dichotomous dependent variable of whether the individual intends to have another child. My second model for Estonia differs from the second one estimated for Poland. Rather than predicting a count variable, it predicts a categorical and ordinal dependent variable of the number of additional children intended. Thus in this case I estimate an ordered logistic regression. These two different dependent

variables have been chosen for a fuller evaluation of the effects of the independent variables.

When estimating each of the models, I follow the approach adopted for Poland in that I conduct the process in three steps; I begin with my key theoretical X variables in step one, and then add the various control variables in the next two steps.

In the discussion of the results, I use the same structure as in the chapter for Poland. I first examine if men and women differ with regard to each of my dependent variables. This is followed by a review of some methodological considerations, specifically, issues of multicollinearity and model diagnostics. I then present the findings from my main sex-specific models. The question pertaining to the division of domestic work asked of Estonian respondents is much more general compared to that asked of Polish men and women. Therefore, I am not able to test the effects of using less and more stringent definitions of equity. However, as in the case of Poland, I devote some attention to the outcomes of models, in which I consider as gender equal only these partnerships in which the men and women perform domestic duties in equal shares. Lastly, I discuss the issue of uncertainty pertaining to future fertility. Here I exclude from my samples those individuals who responded “don’t know/I am not sure” to the fertility question, and I reestimate my main models to examine whether this exclusion has any effect on my conclusions.

Results for the Combined Logistic Regression Model

In this section I estimate a logistic regression model using a combined sample of men and women and including "female" as my predictor variable. This allows me to evaluate if there are any differences between men and women when it comes to the intention of a second or higher order birth. The results of this combined model are presented in Table 30. Note that the size of the combined sample is one-fourth of the size of the corresponding sample for Poland.

`We see in the table below that the "female" variable is insignificant in the combined model, which is similar to the conclusions for the Polish respondents. Furthermore, none of my independent variables is significant. However, for the same methodological reasons as those discussed in Chapter V, I have nevertheless decided to estimate the sex-specific logistic regression models.

Table 30 Logistic Regression Equation Estimating the Effects of Gender Equity on the Intention to Have Another Child for the Combined Dataset of Estonian Male and Female Respondents

Variables:	Odds ratios	Linearized standard errors
GE in the family - man's involvement in domestic duties	**1.43**	**(0.52)**
GE in family-oriented institutions	**1.83**	**(0.78)**
Female	**0.76**	**(0.34)**
Age in years	**0.87*** **	**(0.03)**
Number of children	**0.33*** **	**(0.10)**
Married	**0.86**	**(0.30)**
Large town residence	**1.33**	**(0.56)**
Very religious	**4.64***	**(3.45)**
Post-secondary education	**1.64**	**(0.61)**
No job	**ref.**	
Part-time job	**1.27**	**(0.74)**
Full-time job	**0.47** +	**(0.19)**
Partner employed	**0.43**	**(0.21)**
Household income in top-fifth category	**1.26**	**(0.51)**

Notes: Sample number of observations =274, Sample size = 298. + p<0.1, * p<0.05, **p<0.01, ***p<0.001.

In the next section, before presenting the results of my analyses, I first review issues of multicollinearity and model diagnostics.

Methodological Considerations for the Sex-specific Logistic Regression Models

As mentioned before, there can be potential problems associated with too high multicollinearity. Therefore, before estimating the sex-specific logistic regression models, I have first evaluated the extent of the independent variation of each of my predictor variables via an examination of their tolerance values. I have found them to be sufficiently high, the lowest being 0.58 for women and 0.61 for men. On this basis, I conclude that the results of my sex-specific models, i.e., both the logistic and ordered logistic regressions, should not be affected by multicollinearity problems.

Also in case of Estonia, I have examined the model diagnostics. For the reasons I have already discussed, this had to be done without adjusting my models for survey design.

Not unlike the case for Poland, I have found the distribution of the Pearson residuals for the male and female models to deviate from a normal distribution, which could possibly undermine the soundness of my statistical inferences. I present the values of the skewness and kurtosis statistics for the sex-specific logistic models in Table 31. For women, both of these are larger than the conventionally acceptable values of .8 and 10 respectively. For men, only the value of the skewness statistic is problematic, while the distribution's kurtosis falls within the acceptable range.

Table 31 Summary Data for the Pearson Residuals for the Estonian Unweighted Logistic Models- the Original Models and the Re-estimated Models After Dropping the Cases with Δχ2 Values Greater than 4

Pearson Residuals	No. of observations	Skewness Statistic	Kurtosis Statistic
Females - original model	165	3.97	26.09
Females - re-estimated* model	157	0.93	10.55
Males - original model	107	1.52	5.52
Males - re-estimated* model	440	0.14	7.41

* cases with $\Delta\chi^2$ * values >4 dropped

The examination of the influence statistics suggests that for 8 women and 6 men in the sample the values of the change in Pearson χ2 Statistic were greater than 4. This constitutes 5% of the total female sample and 6% of the male sample. As I have already mentioned, the cases with high values on this diagnostic statistic might well substantially impair the fit of the model. I inspected these problematic observations to check to see if the data might be suspect, but did not find anything unusual or improbable about the scores on these variables or their combination that I could attribute to potential data entry or coding errors.

In this situation I have decided to follow the procedure adopted for Poland, i.e., to experiment with dropping these few cases, re-estimating the models and inspecting the regression results to see whether this would change my inferences as well as my model diagnostics.

Table 31 presents the outcomes of this experiment. It suggests that removing the influential cases results in models for which the Person residuals are almost normally

distributed. Although still slightly high for women, the skewness statistic can be said to fall within the accepted range for both re-estimated models. The kurtosis statistic is below the conventionally used cut-off value for women as well as men. As in the case of Poland, it is important to note that both the original and re-estimated models lead to the same conclusions; the inferences about the effects of the independent variables do not change between the models. However, for Estonian women the magnitude of the regression coefficient for the gender equity in the family variable increases quite substantially indicating a much stronger effect. For this reason, the original model can be considered a more conservative test of the hypotheses. I now turn to reporting the results of the analyses including the influential observations.

Results of the Sex-specific Logistic Regression Models

Here I review the findings of the sex-specific logistic regression models using the "intention to have a second or higher order birth in the future" as my dependent variable. I will examine the magnitude and significance of the logit coefficients to evaluate my hypotheses regarding the positive impact of gender equity on fertility. I hypothesize that Estonian men and women in gender equal families, and perceiving more gender equity in the family-oriented institutions, will be more likely to intend to have another child in the future, net of other important individual characteristics.

As for Poland, I estimated each of my sex-specific models in three steps by starting with my two key independent variables and sequentially adding more and more control variables. Using this approach, I am able to determine first if there is a positive

significant association between any of the measures of gender equity and fertility, and next if the association holds even after adding to the model other commonly examined predictors of fertility. The number of cases for each step of the analyses is kept the same so that I only include observations with no missing values on any of the variables used in the final full model.

As can be seen in Table 33, I have slightly modified the model for Estonian males in terms of the predictors introduced. Firstly, I had to drop the "very religious" variable for men because it predicts success perfectly. Secondly, because the sample for men is so small (only 109 observations), I combine the information about the individual's employment status into one independent control variable, namely "part- or full-time job." This reduces the number of variables in my model so that it is compliant with the rough rule of thumb of ten observations per variable.

Table 32 Logistic Regression Results for Married and Cohabiting Estonian Females aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - man's involvement in domestic duties	**1.34**	**(0.50)**	**4.39****	**(2.51)**	**4.09***	**(2.50)**
GE in family-oriented institutions	**1.46**	**(0.63)**	**2.80 +**	**(1.73)**	**2.71**	**(1.93)**
Age in years			**0.78*****	**(0.05)**	**0.78*****	**(0.05)**
Number of children			**0.25*****	**(0.10)**	**0.22*****	**(0.09)**
Married			**0.85**	**(0.39)**	**0.83**	**(2.16)**
Large town residence			**5.81****	**(3.42)**	**3.60***	**(2.16)**
Very religious					**1.70**	**(1.53)**
Post-secondary education					**1.85**	**(1.01)**
No job					**ref.**	
Part-time job					**1.20**	**(1.14)**
Full-time job					**0.50**	**(0.29)**
Partner employed					**0.10*****	**(0.07)**
Household income in top-fifth category					**1.63**	**(0.90)**

Notes: Sample number of observations=165, odds ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Table 33 Logistic Regression Results for Married and Cohabiting Estonian Males aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - man's involvement in domestic duties	0.71	(0.33)	0.63	(0.31)	0.59	(0.30)
GE in family-oriented institutions	1.34	(0.73)	1.39	(0.85)	1.60	(1.00)
Age in years			0.94	(0.04)	0.97	(0.05)
Number of children			0.39*	(0.16)	0.38*	(0.16)
Married			0.76	(0.42)	0.77	(0.44)
Large town residence			0.33	(0.27)	0.23	(0.21)
Post-secondary education					1.50	(0.96)
No job					ref.	
Part- or full-time job					1.66	(0.73)
Partner employed					0.47	(0.25)
Household income in top-fifth category					0.99	(0.73)

Notes: Sample number of observations=109, odds ratios reported, linearized standard errors reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

The logistic regression results in Tables 32 and 33 above indicate that the situations for men and women are different. The one common finding for both sexes pertains to gender equity in the family-oriented institutions. I have found this independent variable to be insignificant in the simple first step of the model, as well as in

the full model[8]. Counter to my hypothesis, the results suggest that neither men nor women perceiving the family-oriented institutions to be gender equal are more likely to intend to have another child compared to persons who view no gender equity in these institutions.

I have, however, found support for one of my hypotheses in the case of Estonian women. According to the results of the logistic regression model, gender equity in the family has a positive effect on fertility intentions of females. A woman whose partner participates in domestic tasks in equal shares with the female partner, or is mostly himself responsible for these chores, has a significantly greater likelihood of expressing an intention to have another child. This is compared to a woman with a partner not at all committed to household work. Having a partner involved in domestic work substantially increases the odds of a woman to express an intention to have another child in the future, specifically by as much as 309%. The interesting point about this finding is that gender equity in the family showed no significant association with intended fertility in the first step of the model, but became significant only after the control variables were added.

In the case of the male respondents, there was no support for my hypothesis pertaining to gender equity in the family. Although the odds ratio of 1.6 reported in Table 33 indicates an association in the hypothesized direction, the effect is not statistically significant. This means that a man who contributes to unpaid work at home either by

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[8] For women the variables approach significance only in the second step of the model including the independent variables and women's demographic characteristics. However, this weak effect becomes insignificant, even at the $p<0.1$ level, after the socioeconomic characteristics are added.

sharing the work with his partner, or being himself responsible for the work, is no more likely to intend to have another child in the future than a man in a more traditional partnership in which no responsibility for domestic work is required of him.

Results for Other Operationalizations of Gender Equity in the Family

Unlike for Poland, in the case of Estonia, I am unable to differentiate between the effects of gender equity in the family based on less and more stringent definitions of equity. However, I am able to replicate the results reported above with an alternative operationalization of this independent variable. In the tables below, I present the results of models in which a partnership is considered gender equal if domestic work is generally performed by the man and the woman in equal shares. These are the results of the analyses including the two independent variables as well as the control variables identical as in the models originally estimated. I report the odds ratios for my two main independent variables.

Table 34 The Estonian Sex-specific Logistic Regression Models Using the Gender Equity in the Family Variable Constructed Exclusively on the Basis of the Men and Women Sharing the Duties

Model/Variable	GE in the family - household work shared	GE in family-oriented institutions
Females	4.14* (0.020)	2.70 (0.161)
Males	0.65 (0.400)	1.49 (0.523)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

The results presented in Table 34 above indicate that the re-estimated models lead to the same conclusions as those produced by the original sex-specific logistic regression equations. For women, they suggest that it is gender equity in the family, rather than in the other societal institutions, that matters most with regard to predicting the intention of having another child. For men, the findings are also in line with the previous findings that neither gender equity in the family, nor in the family-oriented institutions, plays an important role with regard to predicting the intention of a second or higher order birth.

Males Versus Females

Concerning the findings of the sex-specific logistic regression models for Estonian men and women, the conclusions regarding the differences in the effect of gender equity on fertility for each sex are very straightforward. There is no need for a formal statistical test of the various coefficients for the gender equity in the family-oriented institutions variable because it is insignificant for both men and women. Nor is there a need for a test in case of the gender equity in the family variable. While it significantly increases the women's intention to have a second or higher order birth, it is found to have no such effect for men.

The Uncertainty of Fertility Intentions

Finally, the situation regarding the uncertainty of fertility intentions repeats itself in the Estonian analyses. Guided by the results of my preliminary tests and following the approach of other researchers, I grouped together men and women responding "don't

know/I am not sure" about having another child in the future with those with a categorical "no" response. Both were thus treated as intending no additional children. This enabled me to retain in my analyses numerous cases that would otherwise have been removed. Following the strategy I adopted for Poland (see discussions in the previous chapter), in Table 35 below I present the results of a logistic regression model for females, which I estimated after excluding the women who responded "don't know/I am not sure" to the fertility question. The odds ratios reported for my independent variables are from the full model accounting for women's important demographic and socioeconomic characteristics. Unfortunately I am not able to perform the corresponding analysis for men. The initial sample is already so small that it required some modifications of the variables for the original model to be estimated. Removing additional cases would decrease it to such a small size that it would no longer be useful for my analysis. However, I do not consider this to be an important limitation because none of the two independent variables was significant in the main model for males.

Table 35 The Sex-specific Count Regression Results Based on Samples Excluding Estonian Women Uncertain about their Future Fertility

Model/Variable	GE in the family - household work shared	GE in family-oriented institutions
Females	3.90^{+} (0.101)	8.33^{+} (0.077)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$. sample number of observations=120.

For this analysis, the size of the sample for women was reduced by 45 cases, which constitutes 27% of the observations from the original sample. The results of the model after excluding women who expressed some uncertainty about their future fertility are to some extent consistent with the findings from the equation including all women. Firstly, in the previous model, gender equity in the family had a significant positive impact on women's intended fertility. For the reduced sample, the odds ratio of this independent variable decreases. Also, the effect is no longer significant at the $p<0.05$ level. With a p value of 0.101, it can only be said to have a significant impact at the $p<0.1$ level. This finding is thus in line with the earlier result for women, but the evidence supporting my hypothesis has become much weaker. The difference between the models for the two samples pertains to the effect of gender equity in the family-oriented institutions. The results of the original regression suggested no significant impact of this independent variable. On the other hand, the analysis involving only women with a firm decision about whether or not to have any more children, shows a marginally positive association between gender equity in the family-oriented institutions and fertility intentions. Also, the odds ratio of 8.33 for this variable is twice as high as for gender equity in the family, with a p value of 0.077. All in all, having found at least a marginally significant effect (considering how much the original sample was reduced in the second analysis) for gender equity in the family in both models, I maintain my conclusions about its importance in the fertility intentions of Estonian women. However, since the odds ratio for gender equity in the family-oriented institutions is marginally

significant only for the reduced sample, I will be conservative in my conclusions and maintain that it does not significantly matter with respect to intentions of having another child in the future.

Having discussed the sex-specific logistic regression models, in the next section I present my findings with respect to the ordered logistic regression equations. I have used this particular statistical technique to examine the factors associated with the number of additional children intended expressed as an ordinal dependent variable.

Results for the Combined Ordered Logistic Regression Model

In this section I examine whether there are any differences between Estonian men and women with respect to the number of additional children they intend to have in the future. I first estimate my ordered logistic regression model combining the male and female data and examine the significance of the "female" variable. Table 36 presents the results of this analysis.

The results included in Table 36 below indicate that the "female" variable is not even marginally significant, suggesting that we should not expect any differences between men and women when it comes to the number of additional children they intend to have in the future. However, for the reasons I have already explained, it is worthwhile to estimate the sex-specific ordered logistic regression equations. It should be noted that none of my independent variables is significant in the analysis using the combined data for men and women. This was also the case with the logistic regression analysis. However, after estimating the sex-specific models, the conclusion about gender equity in

the family changed somewhat for women. I now move to the results of my specific analyses for Estonian men and women.

Table 36 Ordered Logistic Regression Equation Estimating the Effects of Gender Equity on the Number of Additional Children Intended for the Combined Dataset of Estonian Male and Female Respondents

Variables:	Odds ratios	Probability values
GE in the family - man's involvement in domestic duties	**1.37**	**(0.337)**
GE in family-oriented institutions	**1.56**	**(0.232)**
Female	**0.59**	**(0.206)**
Age in years	**0.88*****	**(0.000)**
Number of children	**0.40*****	**(0.001)**
Married	**0.91**	**(0.767)**
Large town residence	**1.46**	**(0.338)**
Very religious	**5.02***	**(0.012)**
Post-secondary education	**1.66**	**(0.136)**
No job	**ref.**	
Part-time job	**1.52**	**(0.431)**
Full-time job	**0.50**	**(0.106)**
Partner employed	**0.45**$^{+}$	**(0.053)**
Household income in top-fifth category	**1.26**	**(0.733)**

Notes: Sample number of observations =274, sample size = 298 Odds ratios reported. $^{+}$p<0.1. ∗p<0.05. ∗∗p<0.01. ∗∗∗p<0.001.

Results of the Sex-specific Ordered Logistic Regression Models

There is no need here for me to discuss issues of multicollinearity in the context of my ordered logistic regression models. I have already established that multicollinearity is not problematic in these analyses. Therefore, I move directly to the results of the sex-specific ordered logistic regression models using the categorical and ordinal variable of the number of additional children intended as my dependent variable. As in the case of the logistic regression, I will report my results using the odds ratios, which provide the most intuitive interpretation of the effects.

The results for women presented in Table 37 corroborate the earlier findings based on the logistic regression model. As previously discussed, positive perceptions of gender equity in the family-oriented institutions have no effect on the number of additional children intended. This independent variable works in the hypothesized direction, i.e., it is positively associated with the dependent variable, but it does not reach even the marginal probability level of $p<0.1$.

The inferences produced by the model pertaining to gender equity in the family are the same as in the logistic model. Consistent with my hypothesis, a woman who does not solely face all the domestic work responsibilities but has a partner with whom to share them, or a partner who takes care of them himself, is over three times more likely to intend a higher number of additional children ($p=0.023$). This is compared to a woman involved in a much more traditional relationship when it comes to gender roles

at home. Once again, this independent variable reaches significance only after the control variables have been introduced.

Table 37 Ordered Logistic Regression Results for Married and Cohabiting Estonian Females aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - man's involvement in domestic duties	1.36	(0.848)	3.54**	(0.008)	3.12*	(0.023)
GE in family-oriented institutions	1.48	(0.357)	2.22	(0.113)	2.26	(0.124)
Age in years			0.81***	(0.000)	0.81***	(0.000)
Number of children			0.44*	(0.043)	0.43*	(0.028)
Married			0.90	(0.816)	0.89	(0.775)
Large town residence			4.42**	(0.002)	3.12*	(0.019)
Very religious					2.25	(0.334)
Post-secondary education					1.68	(0.237)
No job					ref.	
Part-time job					1.56	(0.551)
Full-time job					0.72	(0.448)
Partner employed					0.24***	(0.001)
Household income in top-fifth category					1.30	(0.580)

Notes: Sample number of observations=165, odds ratios reported, p values reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

Table 38 Ordered Logistic Regression Results for Married and Cohabiting Estonian Males aged 18-44 with at Least 1 but no More than 3 Children and Living with a Partner

Variables:	Step 1		Step 2		Step 3	
GE in the family - man's involvement in domestic duties	0.73	(0.488)	0.67	(0.375)	0.63	(0.336)
GE in family-oriented institutions	1.16	(0.766)	1.18	(0.769)	1.38	(0.585)
Age in years			0.93	(0.136)	0.97	(0.546)
Number of children			0.42*	(0.030)	0.41*	(0.021)
Married			0.76	(0.614)	0.73	(0.608)
Large town residence			0.40	(0.282)	0.27	(0.164)
Post-secondary education					2.36	(0.225)
No job					ref.	
Part- or full-time job					1.88	(0.172)
Partner employed					0.46	(0.172)
Household income in top-fifth category					0.77	(0.728)

Notes: Sample number of observations=109, odds ratios reported, probability values reported in parentheses, + p<0.1, * p<0.05, **p<0.01, ***p<0.001

The results for men reported in Table 38 above are also consistent with the findings from the logistic regression analysis. The conclusions do not differ with regard to gender equity in the family-oriented institutions or with regard to gender equity in the family. My analyses suggest that for men, as for women, there is no association between

perceptions of equity in institutions related to the family and the number of additional children intended. Although the effect is found to be in the hypothesized direction, it does not reach statistical significance (p=0.585). The model provides no support for my hypothesis pertaining to gender equity in the family. Actually, the association is in the opposite direction than that hypothesized suggesting that it decreases the number of additional children intended for men, but the effect is not significant (p=0.336).

Results for Other Operationalizations of Gender Equity in the Family

In the sex-specific models presented above, I have used the variable for the family that is, based on the definition of equity derived from McDonald's theory, namely that gender does not predetermine the kind of work each of the partners does for the family. Outside of academic discourse, equity in the family would more commonly be associated with the man and woman sharing the tasks. The results for a model incorporating this alternative operationalization of the variables are presented in Table 39.

Table 39 The Estonian Sex-specific Ordered Logistic Regression Models Using the Gender Equity in the Family Variable Constructed Exclusively on the Basis of the Men and Women Sharing the Duties

Model/Variable	GE in the family - household work shared	GE in family-oriented institutions
Females	3.18* (0.020)	2.25 (0.126)
Males	0.70 (0.463)	1.29 (0.662)

Notes: Odds ratios reported. T-values in parentheses. $^{+}p<0.1$. $*p<0.05$. $**p<0.01$. $***p<0.001$.

As in the case of the sex-specific logistic regression, the results based on this alternative operationalization of gender equity in the family are consistent with the findings from the previous sex-specific models. For both men and women the conclusions are identical. For Estonian females, while gender equity in the family tends to increase the likelihood of a higher number of additional children intended, gender equity in the family-oriented institutions does not seem to matter with regard to intended fertility. The odds ratios are practically the same in the original and in the replicated model.

The analyses based on alternative operationalizations have not resulted in any differences for men. As before, both of my independent variables remained insignificant suggesting that gender equity does not affect men's intended fertility.

I will now compare the results of the ordered logistic regression models obtained for men and women.

Males Versus Females

Also in the case of the sex-specific ordered logistic regression models, the conclusions regarding the differences in the effect of gender equity on fertility are rather straightforward. The findings suggest that gender equity in the family has a significant impact on the intended fertility of women, but not for men. Therefore, there is really no need for a formal statistical test to compare the coefficients.

The Uncertainty of Fertility Intentions

Finally, I address the problematic issue of uncertainty about fertility intentions by excluding the so-called undecided group from the analysis. Also in this case, I am able to conduct the analysis only for the reduced sample of women. The already small number of observations for men is insufficient for the estimation of a corresponding model. I present the results for women in Table 40. These are the effects for my independent variables obtained from the full model including all control variables.

Table 40 The Sex-specific Ordered Logistic Regression Results Based on Samples Excluding Estonian Women Uncertain about their Future Fertility

Model/Variable	GE in the family - household work shared	GE in family-oriented institutions
Females	2.73^{+} (0.105)	2.44 (0.138)

Notes: Odds ratios reported. T-values in parentheses. $^{+}$p<0.1. ∗p<0.05. ∗∗p<0.01. ∗∗∗p<0.001. sample number of observations=120.

As the table above indicates, there is some consistency between the results obtained from the model excluding women who expressed uncertainty about their future fertility and the results from the original equation including all women. As previously, the model does not suggest a significant association between gender equity in the family-oriented institutions and intended fertility. In the case of gender equity in the family, while earlier it had a significant positive impact on the number of additional children intended, for the reduced sample the odds ratio of this independent variable decreases slightly, and its probability value increases. It actually exceeds the conventional 0.05

level, and the effect can only be considered marginally significant at the $p<0.1$ level. Therefore, when focusing only on women who are positive about their future fertility intentions, the support for my hypothesis is not as strong. Nevertheless, considering these results, I hold that I may maintain my conclusion that gender equity in the family is important to Estonian women's fertility intentions.

Conclusion

In this chapter I tested my hypotheses about the positive effect of gender equity in the family and the family-oriented institutions on intended fertility of Estonian men and women. I presented and discussed the findings from my two sex-specific models, namely the logistic regression using a dichotomous dependent variable of whether or not an individual intends to have a second or higher order birth, and the ordered logistic regression using the categorical and ordinal variable of the number of additional children intended as the dependent variable.

In none of the sex-specific models did I find any evidence of the hypothesized positive association between gender equity in the family-oriented institutions and fertility intentions. Contrary to my expectations, my findings indicate that Estonian men and women who perceive these institutions as gender equal are not more likely to have higher fertility intentions than individuals who believe that these institutions continue to be founded on the traditional model of the family.

As with the case of Poland, I hold that the most interesting findings for Estonia concern the positive association between gender equity in the family and fertility.

Generally speaking, I have found that higher fertility is intended, net of other demographic and socioeconomic factors, by women who do not carry the whole burden of domestic work because they have partners who are also or even exclusively involved. Regarding both of my dependent variables, gender equity in the family had a consistent effect of increasing fertility. The probability of a woman intending to have another child was increased by 309%, while her odds of having higher fertility plans for the future were increased over two times.

In case of men, the two models produced consistent findings. However, they suggest that in regard to both dependent variables, neither gender equity in the family nor in the family-oriented institutions have a significant effect on intended fertility. In fact, the first of the independent variables was associated in the opposite direction than hypothesized, but then again, this relationship was not significant. The association between the second independent variable, although not at a significant level, was signed in the predicted direction.

After obtaining the above results for my main sex-specific models, I then compared them with findings based on an alternative operationalization of the gender equity in the family variable. In the re-estimated models, I have focused on both partners sharing domestic work because this is the more common definition of couple equality. These additional analyses were shown to support my earlier conclusions about the effects of gender equity in the family on fertility intentions. In fact, for both men and

women, there were only minor differences between the magnitudes of odds ratios produced by the alternative models.

Lastly, following the approach used in my analyses of the Polish respondents, I attempted to address the issue of uncertainty of fertility intentions. Unfortunately, I was only able to do so for Estonian women. The male samples were barely of sufficient size for estimating the main models, let alone the models with reduced samples.

For women, I was able to replicate my models after eliminating those females who responded "don't know/I am not sure" to the fertility question and were initially treated as expressing negative fertility intentions for the future. My conclusions in cases of both analyses were consistent to a large extent. I found the gender equity in the family-oriented institutions to be insignificant for both models based on the full sample. With the reduced samples, the effects of gender equity in these institutions became only marginally significant for the intention of a second or higher order birth. However, I do not consider this sufficient evidence to change my conclusion about the lack of effect this factor has on women's fertility intentions. When it comes to gender equity, the effect was not as significant as in the original models. In fact, for both dependent variables, the probability values of the odds ratios increased but remained at $p=0.1$.

In the next and last chapter of my dissertation, I will summarize my findings from Chapters V and VI, compare the conclusions about the effects of gender equity in both countries, and focus on the implications and the limitations of this research.

CHAPTER VII

CONCLUSIONS

My interests in human fertility and gender issues have led me to focus on gender perspectives on fertility; this is a relatively new approach, but one gaining notable popularity. In this dissertation I have attempted to address several important issues. My central objective was to apply and empirically test McDonald's theory of gender equity in the fertility context of two post-communist "low" and "very low" fertility countries, namely, Poland and Estonia. As I have previously stated, the unusual history of gender relations distinguishes these countries from the rest of Europe. I believe that this particular factor is important to consider when evaluating the robustness of the overall gender perspective on fertility. My dissertation had three additional goals. The first was to test simultaneously the effects of gender equity at the societal level and at the level of the family, the second was to contrast the results of using different operationalizations of gender equity in the family, and the third involved comparing the effects of gender equity on male and female fertility.

This last chapter of my dissertation is devoted to a summary of my research. I will first discuss the main results from Chapters V and VI, which were the fertility models for Poland and Estonia. This section will also cover the findings about the relative importance of gender equity in different institutions regarding intended fertility. I will next discuss whether my findings fit my expectations about how the effects of

gender equity compare between the two countries. Then, I will discuss the issue of the different operationalizations of one of my independent variables. Later, I will focus on the main conclusions pertaining to the differences between men and women emerging from my analyses. Lastly, I will include a general discussion of the implications of my findings, mention the perspectives for future research in this area, and cover the limitations of my analyses.

Summary of Results: Poland

In Chapter V, I used 2001 data extracted from Wave 2 of the Population Policy Acceptance Survey to examine the associations between gender equity in different institutions and fertility in Poland. I focused on three different independent variables pertaining to gender equity, all of them derived from McDonald's theory. The first captures gender equity in the family by taking into account the number of domestic tasks in which the male partner is involved. The second focuses on gender equity in the family-oriented institutions, which are institutions treating men and women as members of families, i.e., based on their socially prescribed roles in the family. The variable was constructed using respondents' perceptions of the extent to which these institutions help women in combining the roles of workers and mothers. The last independent variable represents gender equity in the institutions recognizing men and women as individuals, i.e., the individual-oriented institutions. It measured the perceptions of equality between men and women in market employment in regard to pay and career prospects. Based on the general theoretical perspective, particularly the theory of McDonald, and some

previous empirical studies, the relationships between my independent variables and intended fertility were predicted to be positive. According to the theory, low gender equity in various societal institutions and the family itself negatively impacts fertility because it is in conflict with relatively high gender equity present in education and market employment. The general objective of this chapter was thus to examine whether support would be found for the hypothesized positive effect of gender equity on the fertility of Polish men and women.

I estimated two series of sex-specific models. The first of them, a logistic regression model, used a dichotomous dependent variable differentiating between individuals intending and not intending to have a second or higher order birth. The second analysis for Poland estimated a count of the number of additional children intended as the dependent variable. The use of the two different dependent variables in my empirical examinations was meant to help me more fully evaluate of the robustness of McDonald's theory.

For each of the sex-specific models, the estimation process was split into three steps in which the key independent variables and the control variables were introduced incrementally. I began with a model including only the three key independent variables, entering the individual's demographic characteristics in the next step, and the socioeconomic factors in the last step. This allowed me to evaluate whether there was a significant association between any of the main independent variables and intended fertility and if the effects maintained significance when all the controls were entered. If

the significance was lost, this would suggest that the relationship was in fact explained by other characteristics. While some of the independent control variables were significantly related to the dependent variables and in the expected directions, these associations were not discussed because their effects on fertility were beyond the focus of this dissertation. Those variables were introduced only in order to determine the true impact of my main independent variables.

In general, the findings of the models estimated in Chapter V supported the gendered explanation of very low fertility in Poland. However, statistically significant support was found for only one of the three hypotheses pertaining to gender equity in different institutions.

The most interesting finding of my research concerns the effects of gender equity in the family. The results of both models for Polish women were consistent with McDonald's theory and some previous studies. The results indicated that gender equity in the family, defined as man's contribution to household work either through sharing or being individually responsible for at least one of five feminine tasks, significantly increased women's fertility intentions for the future. A woman in a gender equal family was 85% ($p<0.05$) more likely to intend to have another child than a woman who was not supported by her partner in the performance of domestic work. My results also showed that such a woman also intended to have 84% ($p<0.01$) more additional children in the future.

The findings of my research were not as consistent for Polish men, thus, offering slightly weaker evidence of the importance of gender equity in regard to male fertility. The results of the logistic regression model suggested that a man who participated in carrying out domestic work either by sharing with his partner, or being himself responsible for at least one household chore, was 111% ($p<0.05$) more likely to intend to have another child in the future than a man with no domestic work responsibilities. However, in regard to the number of additional children intended, the difference between men taking on these two different family roles was only marginally significant at the $p<0.1$ level.

In the case of both women and men, there was no support for my two other hypotheses pertaining to the family- and individual-oriented institutions. In most of the sex-specific models, the two respective independent variables were not significant, not even in the first step of the estimation process. For Polish women, the positive effect of perceptions of gender equity in the family-oriented institutions on the number of additional children intended was explained away by the control variables. Therefore, the general conclusion of this research was that women and men who perceived the family- and individual-oriented institutions to be gender equal were equally likely to intend to have another child and intended the same number of additional children as individuals for whom there was gender inequity in either kind of institutions. Thus, I concluded that these aspects of gender equity appear to play no significant role in increasing fertility in Poland.

Summary of Results: Estonia

To test my hypotheses about the effects of gender equity in the low fertility former communist countries, I extended my research to Estonia. In Chapter VI I used the 2003 data extracted from Wave 2 of the Population Policy Acceptance Survey to estimate very similar models evaluating the impact of gender equity on Estonian fertility. For this second country-specific analysis, I was only able to use two of the three different independent variables pertaining to gender equity that I employed in the Polish study. While not identical, these variables were very similar to the ones constructed for Poland. The first of the independent variables represented gender equity in the family. It recognized as gender equal those partnerships where the male partner was generally involved in domestic work by sharing it with the woman or performing it on his own. The second one captured gender equity in the family-oriented institutions. It was constructed on the basis of men's and women's evaluations regarding the efficiency of government policies aimed at meeting the needs of women willing to combine motherhood and work. The primary objective of this chapter was to investigate whether gender equity would have a positive effect on the fertility intensions of Estonian men and women. This was the same hypothesis as the one tested for Poland.

For Estonia, I also estimated two different sex-specific models. The first was a logistic regression model and it used the same dichotomous dependent variable as the one employed in the Polish analyses, namely, the intention to have a second or higher order birth. The second was an ordered logistic regression model, and it used a

categorical and ordinal dependent variable representing the number of additional children intended. The use of these two dependent variables enabled me to undertake a very comprehensive evaluation of McDonald's theory in the Estonian context.

For reasons discussed above, in case of the Estonian sex-specific models I also added the variables to the equation incrementally and in the same sequence as I did in the tests for Poland.

Generally speaking, the results of the models estimated in Chapter VI indicated that gender equity was a factor importantly associated with low fertility of Estonian women. However, the evidence also suggested that only gender equity in the family and not in the family-oriented institutions had a positive effect on the intended fertility of females. Therefore, in the case of women, only one of my two hypotheses was supported.

As predicted on the basis of McDonald's theory and some other previous studies, in both of my models Estonian women who lived with partners contributing to domestic duties expressed higher fertility intentions for the future. This particular factor increased the odds of a woman having positive fertility intentions by as much as 309% ($p<0.05$). Also, a woman in a gender equal family was 212 % more likely to intend a larger number of additional children. But contrary to my hypothesis, the findings suggested that perceptions about gender equity in the family-oriented institution neither significantly increased nor decreased intended fertility.

The results of both of my models for Estonian men suggest that gender equity plays no role in explaining their fertility intentions. In fact, the association between gender equity in the family and both of my dependent variables was in the opposite direction than predicted, but it was insignificant. The association of gender equity in the family-oriented institutions was in the direction hypothesized but it did not reach statistical significance.

Relative Importance of Gender Equity in Different Institutions and the Family

McDonald's theory recognizes that fertility might be influenced both by gender equity at the societal level and at the family level in the relations between partners. My review of the literature indicated very few tests of these two effects and that they have only seldom been tested simultaneously at the individual level. In my fertility studies for Poland and Estonia I attempted to address this issue by studying the relative importance of gender equity in these different institutions and the family.

My research suggested that with regard to low fertility in both Poland and Estonia, it was the organization of domestic work within the family that was more significant. Women's and men's evaluation of whether or not the family support services were sufficient to make mothers' chances on the labor market equal to those of other individuals, including men and childless women, appeared to play no role. I believe that this to be an important finding of my research because it could potentially have far reaching implications for policies and other social undertakings targeting low fertility.

Comparison of the Findings for Poland and Estonia

Prior to estimating my models for Poland and Estonia, for both countries I made some predictions with regard to the relative importance of the effects of gender equity in different institutions and the family. I expected that gender equity in the family would be positively associated with the fertility intentions of women and men in Poland and Estonia. However, I also hypothesized that in Poland the association would be stronger and the effect greater because the level of societal support offered to Polish families with children seems to be more limited. Therefore, compared to Estonian women, Polish women might have to rely more on the support of men, and thus this aspect of gender equity might be particularly important in their case. On the other hand, to some extent, some of the Polish men might be forced into gender equal partnerships and, as it was reasoned, become more family oriented. At the same time, for Estonian men and women I expected that gender equity in the family-oriented institutions could be relatively more important. I set forth this expectation because equity in these kinds of institutions is relatively higher compared to Poland. For instance, the child care services are more developed. Therefore, working mothers are typically not in the situation where they have no choice but to depend on their partners. Thus not as much involvement is expected of men.

My findings did not really offer straightforward evidence supporting my expectations. The results suggested that gender equity in the family mattered importantly to fertility in Poland because it significantly increased the fertility intentions of both men

and women. In Estonia, this aspect of gender equity was found to be associated only with women's fertility intentions and not men's.

Unfortunately the independent variables measuring gender equity in the family that were used in both countries were not identical. Therefore, it was not possible to formally compare the magnitudes of the odds ratios for this variable when it was used to estimate the logistic regression equations for Polish and Estonian women. However, the odds ratio of 4.09 for females in Estonia seemed higher than the odds ratio of 1.83 for females in Poland. In fact, this suggests that when it comes to fertility intentions, there are bigger differences in Estonia than in Poland between women in gender equal partnerships and women in traditional families.

There was no evidence for Estonian men and women that gender equity in the family-oriented institutions was more important to intended fertility than gender equity in the family. In fact, this independent variable was not found to be significant in any of the tests in the main sex-specific models. This suggests that while the support for women with children might be greater in Estonia compared to Poland, it is still relatively limited and in the case of women, it takes the support of men to increase their fertility intentions.

Different Operationalizations of Gender Equity in the Family

My review of the literature indicated fair variation in different studies in the operationalization of the independent variables capturing gender equity. Therefore, I used the question pertaining to the division of housework in the Polish study to perform a crude test of comparing the differential effects emerging from tests where there were

differences in the operationalization of the gender equity in the family variable. I was able to measure the variable based on an increasingly more stringent definition of equity. The main sex-specific models in the Polish study were based on the least stringent definition, which identified as gender equal these families in which the man was involved in at least one of the domestic tasks. The more stringent definitions of gender equity in the family assumed that a gender equal organization of household work required the involvement of the male partner in at least two or more, three or more, four or more, or five tasks. I believe that one important finding of this research is that there are differences in the findings depending on the measurement of gender equity in the family.

In general, my results suggest that the level of or a gradual change in gender equity in the family did not have a significant effect on the fertility intentions of women. The only significant difference was found between women in partnerships in which men were involved in none of the household duties and those where the men made at least a small contribution such as sharing with their female partner or being responsible for one of the five domestic tasks. Therefore, as little as the participation of men in one task seemed to make a difference on fertility, while the actual extent of men's support did not matter.

I would interpret this finding as suggesting that a very small threshold is crucial to fertility, while the gradual differences in the extent of gender equity are not. Even a small involvement of men may be an indicator of a more gender equal mindset or a less

traditional family orientation of the partners. This in effect could be increasing their fertility desires because it is more consistent with gender equity in the individual-oriented institutions outside the family.

The findings were slightly different for men. The results of the series of models suggest that there are significant differences regarding fertility intentions between men with no domestic work responsibilities and those contributing to household work either by sharing with their partners or being fully responsible for at least one chore. However, men fully involved in domestic work by contributing to all five duties were also found to have significantly higher fertility intentions than men less committed and those not at all participating in domestic work. This effect was marginally significant in the logistic regression model and significant at the $p<0.05$ level in the count regression model. Furthermore, the odds ratios and incidence rate ratios tended to be higher for the most stringent definition compared to the least stringent definition of gender equity in the family. This indicates that in the case of men, while the same interpretation as for women might apply, there was also evidence that the graduation of men's involvement in domestic work matters.

The Effects of Gender Equity on Male and Female Fertility

Much of the literature pertaining to the effects of gender equity on fertility has focused more so on women and/or on couples than on men. Therefore, one of the objectives of my dissertation research was to ascertain whether gender equity works similarly or differently with regard to men's and women's fertility.

Gender perspectives tend to emphasize the importance of male roles and the extent to which they have changed in accordance to women's new roles. McDonald's theory puts a particular emphasis on men's contribution to childrearing and housework. His theory stresses how the organization of these tasks has an impact on the degree of incompatibility between being a worker and a mother. Therefore, one might predict that gender equity at home would only be a significant predictor of fertility intentions of women.

My study provides evidence that this is not an accurate expectation. However, the findings about the effects of gender equity were more robust with regard to women's fertility. In the case of Polish and Estonian females, one aspect of gender equity, namely equity in the family, showed a consistent and statistically significant effect across all the main models and in the large majority of the alternative models that were estimated. My research showed that fertility intentions were positively affected by this factor only for Polish men. This was true with respect to the intention of having another child in the future and the number of additional children intended, although the evidence was weak for the latter dependent variable. No similar effects were found for Estonian men.

Interestingly, in the sex-specific logistic regression models for Polish respondents, the impact of equity in the family was the same for both sexes in terms of its magnitude.

All in all, I would claim that my research offers more evidence supporting the importance of gender equity for women's fertility. However, it was not completely

irrelevant with respect to the fertility of men, as was suggested by the results of the Polish logistic regression model and to some extent by the results of the count regression model. This finding is consistent with earlier studies suggesting that men with more egalitarian attitudes tend to have higher fertility and higher fertility aspirations.

Having found that gender equity in the family should be considered a factor associated with men's fertility as well as that of women's, it seems reasonable to argue that the explanations for its positive effect are somewhat different for the two sexes. For women it might have more to do with the more equal distribution of the actual burden of childrearing between partners and the overall support of men in regard to household responsibilities. For men, it might well be that for those who are more involved in household work, the costs of children might be higher. At the same time, however, such men might experience more joy from family life and parenthood. Thus, they may express higher fertility desires.

Implications and Future Research

I hold that the research reported in this dissertation makes important contributions in areas where prior and systematic research has been lacking. I used the framework developed by McDonald to provide a perspective for examining the low fertility levels in two post-communist countries, investigations which had not been conducted previously. In general, I found evidence that gender equity had the effect of increasing fertility in both countries; its positive impact was shown for Polish men and women and for Estonian women, but not for Estonian men. Firstly, I believe this in itself

is an interesting finding considering the specific history of gender relations in both countries. Secondly, based on the literature reviewed in Chapter II, I conclude that the positive effects of gender equity in the family are more pronounced in countries which in general devote more attention to issues of gender. For countries not as committed to promoting gender equity, the results have been less consistent. In regard to this general pattern in the empirical findings, gender equity in the family could have actually been expected to have no impact on fertility in Poland and Estonia. This is so because the transformation of the early 1990s had a rather negative impact on equity between men and women in these countries. However, the opposite was found to be true. As I have argued, this is most likely associated with one major factor. With a long tradition of women's high labor force participation as well as an economic situation requiring women to be responsible for providing the family's second salary, equity at home is important to fertility because societal support tends to be limited.

Hence my research shows that gendered explanations fit not only the low fertility situations in countries generally engaged in promoting gender equity, but also in the former communist countries. This is the case, even though the two countries analyzed here experienced rapid fertility declines but also actual setbacks in gender issues at the same time. These results, in my opinion, speak to the robustness and accuracy, as well as the relevance, of McDonald's framework.

Furthermore, it should be emphasized that my research has important implications for policy makers. Overall, the findings of my analyses indicate that gender

equity deserves attention with respect to low fertility both in Estonia and in Poland; gender equity has been shown to be an important component of this demographic behavior. The enhanced understanding of very low fertility that can be gained through this gendered examination could well provide the necessary foundation for more effective efforts aiming at increasing fertility rates. My research for both countries suggests that in individual-level examinations, there was no influence of different societal institutions on men's and women's fertility. It showed that gender equity in the family was far more significant than evaluations of whether or not family support services were sufficient. Therefore, besides focusing on particular policies aimed at increasing fertility, which generally tend to be expensive and their effectiveness inconsistent, I hold that efforts should be more concentrated on measures that would encourage men to intensify their shares of domestic work.

I believe that the next most important implication of my dissertation pertains to the issue of operationalization of gender equity in the family. My results showed that among Polish women, its significant effect was exerted only when the variable was based on the least stringent definition of equity in the family. I have interpreted this finding as an indication that what matters to women's fertility is rather the fact of being in a partnership oriented at least minimally towards gender equity rather than the gradual extent of equity. In the case of men, the results were slightly different in that the observed differences pertained mainly to those fully involved in household work and all other males.

I believe this signifies that it is important to pay attention to how we measure gender equity. In my opinion, it would be beneficial if more comparable analyses for different countries were conducted and ideally if all used a universal and carefully developed instrument. So far, there has been considerable variation in the way the independent variables pertaining to equity in the family and the family-oriented institutions have been constructed. Additionally, as I have discussed earlier, the findings of the analyses in this area might well be biased because of the inaccuracies in the reporting of the division of domestic work. Therefore, in general, I believe there is a lot of room for improvement in regard to measuring gender equity. Nevertheless it should be noted that there has been some progress beyond using the crude measures of women's status.

In my opinion, there are at least two ways in which this kind of research could be extended in the future. I believe that while the research reported in my dissertation showed the applicability of McDonald's theory to the low fertility situation in the former communist countries, my analyses are still somewhat limited because they only focused on two societies. Similar analyses need to be carried out for other Central and Eastern European countries which share Poland's and Estonia's experiences of political and economic transformations, but differ in terms of family transitions and attitudes toward these changes. There is also some substantial variation in the extent their institutional and policy settings currently promote gender equity.

Secondly, I believe that the relative importance of gender equity in the family and the family-oriented institutions is a subject that requires further attention. As I have mentioned, at the individual level only a couple of studies to date have simultaneously addressed this issue. My findings corroborate the available evidence suggesting the effect of equity at home is more important to fertility than its levels at more distant institutions. As I have already stated, this finding could have far reaching implications with respect to the effectiveness of efforts aimed at addressing the situation of low fertility in different countries. Therefore I believe further research is needed and perhaps better measures could be employed to support this claim.

Limitations

As tends to be the case with many empirical studies, my research has a number of limitations. I will now discuss some of them, recalling that some have already been addressed in earlier chapters. Most of these shortcomings could have been avoided if better and more comprehensive data had been available.

Firstly, similarly to some other studies, the construction of my gender equity measure for the family had one important weakness. In Poland explicitly, and in Estonia implicitly, the variable was based only on general domestic tasks and did not cover specific childcare duties. The Polish survey instrument included questions related to children. However, these particular items were very age-specific, such that it would have been impossible to make comparisons among women and/or men with children of different ages. Additionally, the items related to childcare seemed more like a random set

of chores than an exhaustive list. The Estonian questionnaire did not even have a question asking specifically about the division of childcare. This limitation may have important implications. In some cases, researchers have found that it is the fathers' contribution to childcare that tend to be significantly associated with fertility, whereas their shares of domestic work were not (see e.g. Cooke 2004; Cooke 2008). A different data source would be needed to overcome this difficulty; one would be needed that simultaneously included both aspects of unpaid family work.

Secondly, there was also one potentially important variable missing in the models estimated in this dissertation. Although women's and men's educational attainment was controlled, no data were available on their incomes or their contributions to monthly household income. As human capital theory suggests, the level of education is strongly related to income over the life course; nevertheless it is hard to make assumptions about the impact of including this variable with other predictors in the model.

Finally, McDonald and some other scholars have explicitly noted that there are methodological difficulties associated with gender equity measures. Naturally, my study also faced this challenge but offered no perfect solutions. The measures of gender equity in the family-oriented institutions for both countries and the individual-oriented institutions in the case of Poland were based on perceptions. This is consistent with McDonald's suggestions. Nevertheless, it should be noted that the effects of these perception-based measures were weighted against a measure of gender equity in the

family based on actual behavior. It is not unlikely that this could be affecting their significance.

Conclusion

Low fertility has become and will likely continue to be a concern for an ever growing number of countries in the world. Some of the consequences of rapid population decline, to which these fertility levels have contributed, have already been discussed. In the future, the causes and ways to tackle the problem of drastic fertility declines will certainly be one of the research priorities in the social sciences.

Overall, the findings of my dissertation indicate that gender equity deserves attention in fertility studies, especially in the context of countries with very low fertility. Using a gendered approach to enhance our understanding of very low fertility could potentially benefit the efforts aimed at increasing fertility rates. The results of my analyses certainly point to encouraging men to intensify their shares of domestic work because this factor was shown to have a consistent and significant positive effect on fertility intentions.

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