

THE ECONOMIC AND SOCIAL
CONSEQUENCES OF MATERNITY
PROTECTION: A CROSS-
COUNTRY ANALYSIS

by

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Abstract

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This study is devoted to the investigation of the social and economic consequences of maternity protection all over the world. Its proponents often state that maternity protection helps to improve the health of children and eliminate gender discrimination in the labor market. Moreover, maternity leave entitlements are designed so that they reduce to some extent the cost of children for women, influencing in such a way fertility rates. Maternity leave laws have similar design in more than 100 countries. The findings of this study suggest that the relationship between maternity leave duration and variables under consideration (fertility rate, infant mortality rate, and female-male labor market differentials) is significantly different across country groupings. This raises doubts as to the practicability of imposing similar policies without embodying regional and cultural differences in their structure.

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GLOSSARY

Gender discrimination. "Any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women ... of human rights and fundamental freedoms in the political, economic, social, cultural, civil, or any other field". (1979 UN Convention on the Elimination of All Forms of Discrimination against women).

Infant mortality rate. The IMR is a measure of the probability of dying between birth and 1 year of age. It represents the annual number of deaths of infants per 1000 live births during the same period.

Live births. According to the standard definition of the World Health Organization, this includes all births, with the exception of stillbirths, regardless of the size, gestation age, or "viability" of the newborn infant, or his or her death soon after birth or before the required birth-registration date. Most of the countries considered in the paper have adopted the WHO definition, and only a few still use the Soviet concept, that excludes infants born before the end of the 28th week of pregnancy at a weight under 1000 grams or a length under 35 centimeters and who die during the first seven days of life.

LFPR. Female Labor Force Participation Rate - percentage of female population aged 15-60 working or actively looking for work.

Maternity leave. A time off work that usually covers a period before and after childbirth and is based on an immediate concern for the physical survival and health of mother and child and, as such is similar to a social insurance benefit. It offers full-wage compensation sick leave and is available only for women.

Parental leave, or extended maternity leave. An entitlement to time away from work to care for infants or young children with dismissal prohibited and job-reinstatement guaranteed at the end of the leave. Any family member could be eligible for parental leave.

INTRODUCTION

The persistence of gender differentials in labor market outcomes has inspired economists to look for the reasons of this situation. During the last twenty years their attention has been attracted primarily to gender differentials in earnings. Some authors ascribe these differentials to differences in workers' characteristics: preferences, comparative advantage, or human capital (Becker 1985, Rosen 1986), while others consider them as consequences of discrimination by gender either statistical or occupational (Hellerstein et al. 1997). Moreover, the empirical evidence suggests that these two groups of explanations are interrelated and the nature of this interrelation is difficult (and often impossible) to determine (Altonji and Blank 1999). However, in many papers, theoretical as well as empirical, children appear to be one of the important sources of females' inferior position in the labor market (and not only for those women with children, but to some extent for all women in general).

So, the rational response of women to such a situation is to choose to bear fewer children. This could be harmful for the society as a whole, especially in those developed countries and transition economies, where the decline of the population size has been observed in recent years. Thus, by choosing to have children women appear to reduce their chances for labor

market success, but at the same time may be creating an externality to the society (positive in underpopulated countries and negative in overpopulated countries).

Maternity protection laws first enacted in Germany at the end of the last century was rather paternalistic in its concern for the health of the child and mother (Ruhm 1999) and *prohibited* mothers from work during the six weeks after the birth. But later on its proponents have argued that maternity leave not only helps to improve children's health, but also their mothers' position in labor markets (i.e. eliminate gender discrimination). However, since 1960's maternity protection in developed countries has changed considerably, providing at present leave period up to 20 weeks and maternity benefits almost everywhere at 80-100% of previous earnings (Elstob 1998). Following the example of developed countries and International Labour Office Conventions, maternity protective policies have been adopted by more than 100 countries (Women's Rights to Maternity Protection 1999). But do arrangements designed in a similar manner have similar effects across groups of countries? And are these effects beneficial either for societies or for females? This needs to be tested.

The purpose of this paper is to test whether the maternity leave policies have similar effects across country groupings. An aggregate data set

on 162 countries is used to compare the relationship between the duration of maternity leaves and fertility rates, infant mortality rates, the gender wage ratio and the female-male labor force participation rate ratio in six groupings.

In the first chapter the overview of the current female position in labor markets is given. The second chapter presents possible explanations of the persistent female-male differentials in the labor market. And , finally, in Chapter 3 the empirical evidence is analyzed beginning from the theoretical background of maternity leave effects, following with the econometric specifications and results from pooled least squares estimation.

The policy implications of this paper are quite obvious. If the maternity leave duration has different impact on variables under consideration, then there may be dangerous to recommend that all countries adopt similar arrangements. However, such results do not necessarily mean that there is no need in maternity protection. They could just point out the need to be more attentive to local institutional constraints, cultural differences, and local labor market peculiarities when constructing policy measures.

Chapter 1

WOMEN IN LABOR MARKETS

For ages, human society seemed to be following the words written in the Bible that female servant should be paid half as much as male servant (Book of Leviticus, Old Testament). And that was not an arguable question. The twentieth century has dramatically changed the role of women in the society and these changes still continue. This chapter is devoted to the overview of some facts about the position of women in labor markets all over the world for the period since 1970.

Position of women in labor markets

The importance of female workers in the economy could not be understated since the data speak for themselves. As could be seen from the Figure A1 in Appendix the percentage of female workers in the labor force has grown all over the world, except for some countries in Sub-Saharan region and those in transition. Despite the slight decline in the percentage of women in the labor force in transition economies, the percent of female workers in the total labor force there is rather impressive: it is, on average, higher than that for other countries (45-50%). The largest increase, over 10%, has been observed across developed countries. This may be an indicator of better treatment for females starting from "readily available contraception" and ending with an "access to much wider range of jobs thanks to better education". (Women and Work 1998, 3) And those changes could be attributed mainly to the increase in female labor force participation rate (LFPR) (Appendix, Figure A2). For instance, the percentage of female population in the labor force has more than doubled since 1980 in Qatar, more

than 20% increase has occurred in Brazil. In other countries the increase in the female LFPR was rather modest: less than 10% in developed countries and Asian emerging economies, and less than 5% in Sub Saharan region. Transition economies, except for Albania (5% increase) experienced 5-10% decline in the female labor force participation rate.

Since the role of women in the society is much wider than just a worker, it would be fair to look at another crucial indicator which is highly correlated with the economic growth and development, namely: fertility rate (Galor and Weil 1996). As Figure A3 in Appendix shows it has declined sharply since 1970. For example in Syrian Arab Republic, Egypt, Bangladesh the fertility rates in 1997 were half as big as it were in 1970. Even developed countries and former socialist block countries where fertility rate was rather small (2-3 births per woman) have been experienced further decline to less than 2 births in developed countries, and in transition economies to slightly more than 1 birth per woman.

Low fertility rates (and the resulting low birth rates) along with the increases in life expectancy (Appendix, Figure A4) have forced governments in developed countries to look for extra labor that could help pay for the pensions of the growing number of retired people. European Commission considers females with their relatively low labor force participation rate as a source of that extra labor (Women and Work 1998). And this solution seems appropriate for many countries, which with continuations of present trends will face similar problems in the future.

It could be argued that the increasing female labor force participation is good for economies. "If more people are paying taxes, the burden is spread more widely. Being able to draw on larger pool of available workers improves

the quality of labour, reduces the risk of shortages and raises demand, not least for goods and services that will make women's life easier: labour-saving devices, convenience foods, meals out, child care». (Women and Work 1998, 4) So, increasing number of female workers is perhaps good for the economy in general. But are jobs as good for females?

The first doubt about the benefits for a woman of being in the labor force arises from the observed all over the world female-male differences in all dimensions of labor market, and not least in wages and salaries. "Women all over the world are paid less than men. And lower pay usually means lower or no benefits and a smaller pension on retirement. Thanks to equal-pay and equal opportunities legislation, both in individual countries and at supranational level, the pay gap has got [sic] smaller and the discrimination less blatant, but neither has disappeared. And legislation alone has little effect unless governments are willing to enforce it". (Women's Progress in Workforce Improving Worldwide, But Occupational Segregation Still Rife 1997, 3).

Certainly, as Table 1 shows, all over the world the gender pay ratios have improved, except for that in transition economies, where the situation has worsened (what possibly reflects not the long term trend but rather temporary results of structural changes in economies). However, these improvements are rather small, leaving the female-male wage gap in the range from 20 to 30 percent in developed economies, Latin America, and Middle East, 30-35% in transition economies, 40-50% in Asia, and 30-40% in Sub Saharan Africa.

The other doubt arises from the side of social life. Of course, the individual may be the basic economic and political unit, but families are basic

social units. Balancing work and family is extremely challenging task, especially for women. A variety of measures exist in different countries to alleviate that task and promote equal treatment for male and female workers. The major part of these antidiscrimination laws was inspired by the International Labor Organization (ILO), which has adopted 180 Conventions and 187 Recommendations since 1919, covering a broad range of matters in the field of labor (Elstob 1998). Most of these instruments apply equally to men and women. However, there has been adopted a number of special standards aimed especially at women workers. A brief description of international arrangements devoted to protect reproductive function of women appears in the next section.

Table 1. **Female-Male Pay Ratios** (selected countries and years)

Country	Ratio	Year
Belgium	69.0	1980
	79.0	1995
USA	65.0	1986
	70.7	1997
Hungary	77.7	1982
	65.3	1995
Russia	70.9	1989
	69.5	1996
Korea	45.1	1980
	54.1	1995
Costa Rica	73.0	1984
	70.9	1995
El Salvador	87.6	1984
	97.0	1995
Ghana	72.7	1980
	73.7	1995
Kenya	62.5	1985
	61.8	1995

Egypt	73.0	1985
	73.0	1995
Sudan	75.0	1980
	89.8	1995

Source: 1999 Key Indicators of the Labour Market CD-ROM. International Labour Organization.

Maternity Protection legislation

Under the 1952 ILO Convention No.103 the provisions for maternity protection include (Women's Rights to Maternity Protection 1999):

- At least 12 weeks of maternity leave (with no less than 6 weeks after the confinement).
- Extension of leave for medically certified illness.
- Prohibition of dismissal.
- Remunerated breastfeeding breaks.
- Cash benefits provided through compulsory social insurance, social assistance funds, or public funds. But in no case from the employers.

Thirty-three countries ratified this convention. Other countries have not ratified it mainly because of the requirement to cover maternity benefits from social or National Insurance funds. However, maternity leave arrangements in more than a hundred countries imply standards similar to those established in the ILO Conventions. (See database from Women's Rights to Maternity Protection 1999).

The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) «calls on governments to include the principle of equality of men and women in their national constitutions and appropriate legislation. Article 11 highlights the rights of working women to the protection of their health and to safe working conditions, including the safeguarding of their reproductive functions and special protection during pregnancy. It prohibits employers from dismissing women on the grounds of pregnancy or maternity leave and requires the establishments of necessary support center to facilitate work and family life, particularly childcare facilities and maternity leave with pay or comparable benefits without the loss of employment,

seniority, or social allowances» (Women's Rights to Maternity Protection 1999).

According to a recent ILO review, 144 countries have provisions regarding maternity leave either within their labor laws or as a separate law. In 81 out of those 144 countries women are guaranteed with 100% of pay under any conditions. In others partial compensation is given under the specified conditions. In addition, more than 125 countries have some provisions or legislation guaranteeing employment security for pregnant women and women taking maternity leave (Women's Rights to Maternity Protection 1999).

So, many countries try to follow the ILO recommendations concerning the longevity and terms of maternity leave. However, is it equally good for women in different countries with such huge differences in cultural, social traditions, and economic conditions, as, for instance, Ghana and United States of America, or Islamic and Christian world, where attitudes towards women have always been very different? This needs to be investigated.

Chapter 2

POSSIBLE REASONS FOR INFERIOR ECONOMIC POSITION OF WOMEN

Attempts made by policy makers to improve females' economic position have been going along with the persistent female-male differentials in the labor market creating a challenge for economic analysis. Economists as well as specialists in other social sciences try to determine and explain the reasons of such situation. This chapter presents theoretical and empirical explanations of the existence of gender differentials in labor markets.

Theoretical considerations

Economists have primarily paid attention to the gap between female and male position in the labor markets, in particular to gender pay gap. These theoretical considerations could be divided into two major groups. The first uses explanations based on worker's characteristics and preferences rather than discrimination, and the second uses explanations based on the assumptions concerning the behavior of employers. It is important to emphasize that these two groups of explanations are complements rather than substitutes. Moreover, they are interrelated and these interrelationships are extremely complicated and require interdisciplinary approaches to research.

Explaining labor market difference by differences in workers' preferences seems rather rational. Clearly people differ in their preferences for the particular kinds of work, for work in general, for leisure and household activities. So, the distribution of preferences for job characteristics and the employer's valuation of jobs will determine the occupational wage distribution as well as the occupational distribution of particular groups (here males and

females) (Rosen 1986). The major problem with such an explanation arises when considering the source of gender differences in preferences. One such source could be the rational response of parents to market discrimination that works by shaping girls' and boys' preferences in different directions. The other source could be the pre-market discrimination in education and child rearing.

Yet another explanation comes from the differences in comparative advantage. According to this explanation biological difference in reproductive functions between genders is a basis for female's comparative advantage in household work (Mincer and Polachek 1974). In addition, male's physical strength has contributed to the formation of men's advantage in certain kinds of jobs. This female comparative advantage could be amplified by parental investment in daughter's home production skills, which are expected to be awarded in the marriage market (Becker 1991).

Closely related to comparative advantage are gender differences in human capital investment. Following the argument in the above paragraph, since women have comparative advantage in household work, they expect to spend less time in the labor market. As a result, they choose to invest less in their market skills that leads to lower market remuneration. On the other hand, pre-market discrimination and parental discrimination in favor of boys may also reduce women's accumulation of human capital by affecting the quality of schooling, fields of study, and access to higher education. For instance, historical restrictions on the admission of women to colleges or training programs made it difficult in the past for women to pursue certain career options (Altonji and Blank 1999).

As it was already mentioned, discrimination can shape the individual preferences, amplify female's comparative advantage in household work, and

influence the human capital investment decisions before and after an individual enters the labor market. Thus, all these differences even in theoretical considerations fail to be truly exogenous variables when examining the gender differentials in labor market. So, attempts to explain gender differences in labor market by presence of discriminatory behavior will be given further in the section.

Discrimination is defined as a situation in which persons who provide labor market services and who are equally productive in a physical or material sense are treated unequally in a way that is related to an observable characteristic (Altonji and Blank 1999).

The best-developed model of discrimination is that of Gary Becker (1971). He models prejudice as a taste for discrimination measured in money terms («coefficient of discrimination»). So, an employer maximizes his utility function that is the sum of profits plus the monetary value of utility from employing members of a particular group. To be precise, if d is the coefficient of discrimination, then the firm would hire workers from the discriminated group only if the difference between wages of workers from non-discriminated group and from discriminated group is greater than d . The most important application of the theory is that it is economically inefficient for firms to discriminate. So, in the long run there would be no discrimination, since more efficient non-discriminating employers would replace the discriminating ones.

Epstein (1992) argues that the gender discrimination is rational by nature. This comes out of the different conditions of work and treatment demanded by female workers: pregnancy, parenthood, medical coverage, and rest room facilities.... A rational employer takes all these differences into account when determining the appropriate compensation package. And mainly

these differences in demand for working conditions are the sources of eventual differences in labor market outcomes.

This rationality in employer's decision making may actually give rise to statistical discrimination, leading to a situation where even women whose demands are the same as men's are actually paid less.

The starting point in the literature on statistical discrimination is that firms have limited information about the skills and inclinations of workers. Under such conditions, employers have an incentive to use any signal that could be somehow correlated with the actual productivity of workers. Although such behavior is often illegal when based on gender, it is difficult to determine. And the discriminatory situation could persist over time, especially if the beliefs about the productivity of certain groups are self-confirming. When considering statistical discrimination against women, it is clear that these beliefs could be self-confirming. If employers believe that women on average are less educated and are inclined to leave work for long periods for child rearing, they offer female workers lower wages. In turn women, knowing that female workers are on average paid less will choose to invest less in human capital and not to return to work soon after the birth of a child, confirming the employers' beliefs. Hence, children are to some extent responsible for statistical discrimination against women in labor markets.

In economic literature there exist other arguments why could children turn out to be the major females' disadvantage. And since the "women - children - society" relationship is under consideration in this study, the discussion of children's influence on females' labor market outcomes is given in the separate section.

Children as a major female's disadvantage in labor markets

In addition to the reason concerning the self-confirming beliefs of employers as to the female workers and children given in the previous section three other reasons why children handicap females' economic position could be given:

"First, many women leave the labor market during pregnancy, at childbirth, or when their children are young. These child-related interruptions are damaging to subsequent earnings because three out of four births occur to women before the age of 30 - the same time that men are gaining the training and experience that lead to higher earnings later in the life. Second, even when mothers stay in the labor force, responsibility for children frequently constraints their choice of job: they accept lower wages in exchange for shorter or more flexible hours,... Third, women who have disproportionate responsibility for child care and housework often have to make sacrifices in their market work. For instance, when a young child is present, women are more likely than men to be absent from work, even at equal levels of education and wages" (Leigh 1983).

The above reasons are rather objective and they could have explained any female-male differential in labor markets if all females had children. Why then even childless women earn less than male workers? For example Fuchs (1989) estimates that childless women in the USA are on average paid 20% less than male workers. This may happen due to either existence of gender discrimination (not based on any rational considerations) or statistical discrimination which sounds rather rational from the employers' point of view. So, it is clear that at least part of the gender differentials could be attributed to the gender discrimination (no matter rational or irrational) and changes in these differentials may very well reflect changes in the magnitude of gender discrimination.

Although there exists an opinion that since "only women can bear children, only women must incur the additional costs associated with caring for herself and her child during pregnancy", and there is no need for

government intervention (Epstein 1992), other authors argue that it could be harmful for the society to stay away (Fuchs 1989) and let women in response to labor market discrimination choose to have less children as has actually happened everywhere in the world.

To summarize, children are of major concern either by employers as a signal about females' productivity in the world of imperfect information, or by female workers as being their major disadvantage, or by societies as constituting positive externality for underpopulated countries and negative - for overpopulated countries. And policies related to children should have effect on females, children, and society. So, the next chapter is devoted to closer analysis of the consequences of maternity protection legislation.

Chapter 3

EFFECTIVENESS OF MATERNITY PROTECTION

Theory

Since people are social creatures they certainly influence societies they live in. They may benefit their societies, as well as create additional costs for them.

Childbirth has positive as well as negative effects on society. Negative effects are cost associated with the appearance of one more member society has to cover during his lifetime. While benefits are positive externalities this society member will create when he grow up. Of course, at the time the child is born nobody knows how much will it cost for the society and by how much he will benefit this society. However, it could be assumed that rich nations with their low fertility rates could expect that their benefits from having one more society member will outweigh the costs associated with it. This assumption could be justified by the facts that rich nations have developed health care and education systems, they are strong enough to overcome terrible consequences of natural disasters. As a result they are supposed to have healthier and more educated members of society who in turn will have capability to benefit the society they live in.

The situation is the opposite in poor societies. Governments there are weak paying little attention to health care and education. Famines, wars, diseases, and natural disasters worsen the situation further by destroying the resources available. So, it could be assumed that in poor countries the costs associated with the additional society member during his lifetime are greater than the benefits he could create when he grow up. There could also exist a point (that is, for example amount of children born by one generation of

women) at which benefits created by these children for the society are exactly equal to the costs for the society associated with them.

When looking at the amount of children born by an average woman in the society, the above considerations are summarized in the Figure 1 in the curve MEE (Marginal External Effect). The horizontal axis measures the fertility rate («production» of children). The marginal cost curve reflects a woman's direct and indirect (opportunity) private costs of having children: MC^R for a woman from a rich nation and MC^P for a woman from a poor nation. It is assumed that MC curve is upward sloping and that $MC^R > MC^P$ at any number of children. Demand curve measures the marginal private benefits from having children (emotions, help and material support in elder years). It might actually be different in rich and poor societies but for the purpose of the present analysis it is assumed to be similar in any country. The woman from the rich country will choose to have q^R children, at the intersection of the demand curve and her marginal cost curve, while the woman from the poor country will choose to have q^P children with $q^R < q^P$. But born and grown children generate external effects for the society, as it is shown by the marginal external effect curve MEE. The inefficiency arises because women do not take into account all the benefits and costs of the children they bear: the price of children in rich countries is too high to encourage women to have more children. And at the same time the implied price of children in poor countries is too low to encourage women there to have fewer children (failure of birth rate controls in China and India). The efficient numbers of children determined by the intersection of MSB curve and private MC curves are higher than the privately chosen level in rich countries and lower than that in poor countries points R^* and P^* respectively.

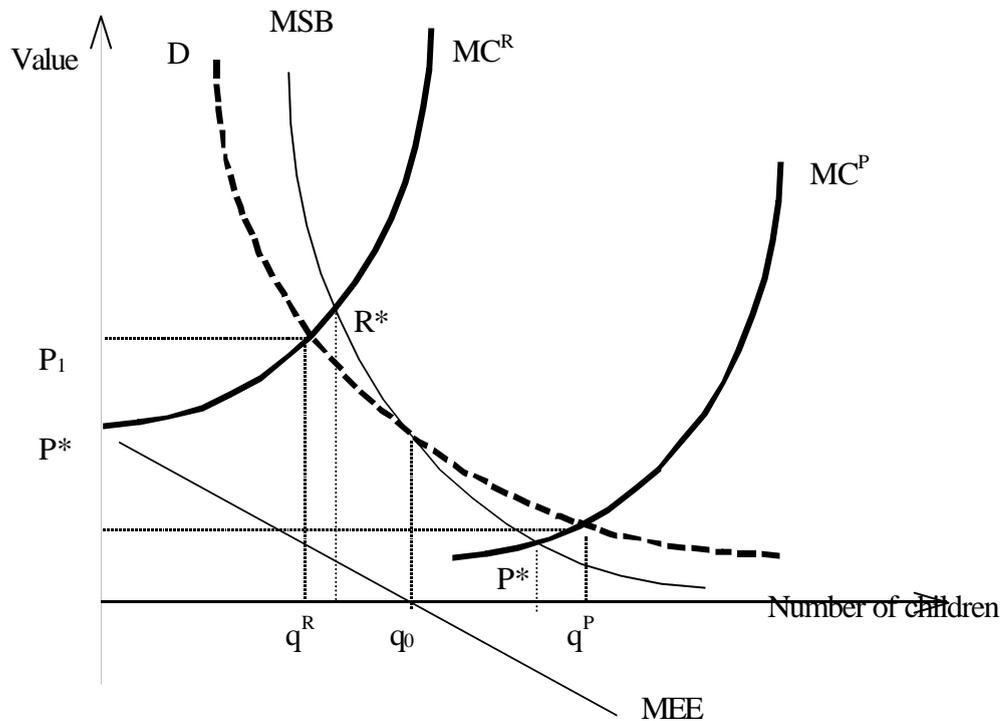


Figure 1. External Effects from Having Children.

There is no mechanism invented to incorporate external effects on the society into the private decision making process. However, the result desirable for rich societies could be achieved by lowering costs of children for women (Ben-Porath 1982) and the maternity protection could be considered as such a measure. Assuming that some part of the private costs of children for female worker constitutes the costs associated with the search of new job after she decides to return to the labor force. Maternity leave is clearly designed so that it eliminates this cost requiring the employer to keep the job until the woman returns to work. So, by eliminating search costs associated

with the return to the work, maternity leaves allow to decrease the overall marginal costs of having children, shifting the MC curve rightward (Figure 2).

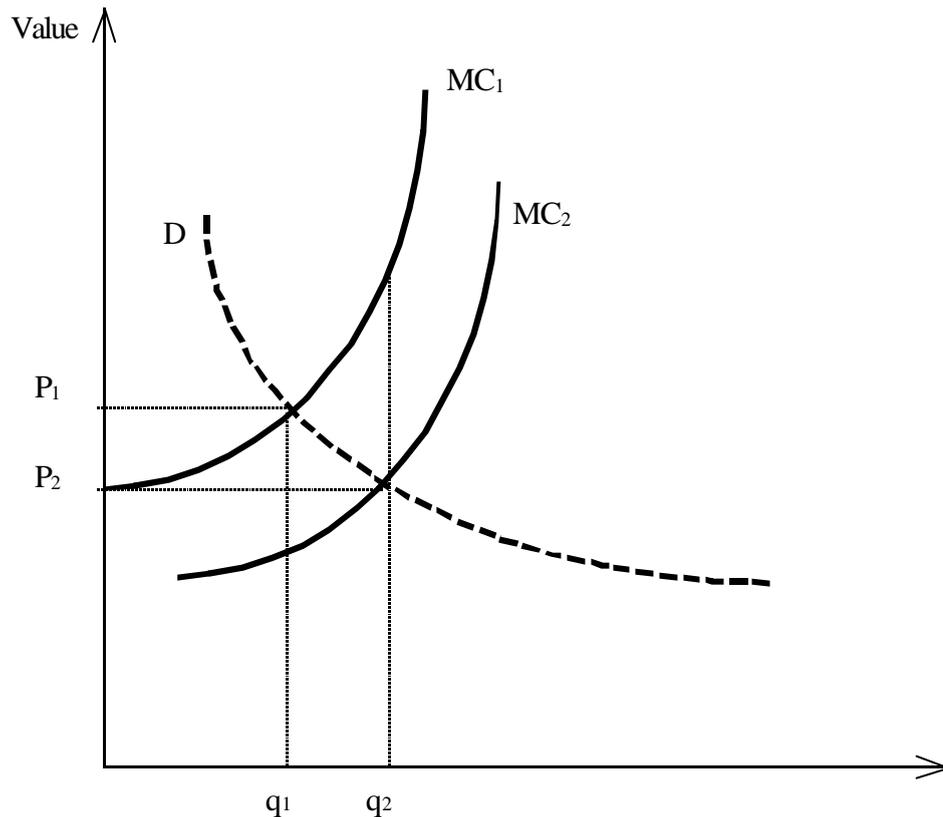


Figure 2. Impact of Maternity Leave on Fertility Rate.

This rightward shift of the cost curve allows women to choose to have more children by lowering the price to P_2 . But such arrangements if similar for both rich and poor societies could lead to the increase of fertility rates in the poor countries as well as in the rich countries. As a result maternity leaves while helping to internalize positive externality created by women in rich countries worsen the situation in the poor countries. So, the

maternity leave entitlements increase fertility rates everywhere no matter whether this increase is desirable for the society or not.

Another possible effect of maternity protection could be that suggested by its proponents. They assure that generous maternity leaves improve the health of children, physical as well as mental, which according to the above model would increase marginal social benefits for the society. And they also help in improving females' position in labor markets, i.e. in eliminating gender discrimination in labor markets.

While helping in correcting the failure in one market (at least in developed countries), maternity protection may reduce economic efficiency in other markets all over the world. Epstein (1992) asserts that any kind of entitlement leads to inefficiencies. In particular, inefficiencies in the labor markets could arise because of limiting the ability of employers and workers to select the optimal compensation package by bargaining (Ruhm 1999).

Considering the effects of maternity protection on all women, not just on those with young children, shows, at least in theory, negative effects on female wages. Market demand and supply curves for female labor are shown in Figure 3. Suppose that initially the female labor market was in equilibrium at point 1 with L_1 females employed at wage level W_1 . First, consider the case when maternity protection imposes neither direct costs on employers (e.g. properly designed legislation in accordance with the ILO Convention which prohibit employer's responsibility for paying maternity benefits) nor indirect costs associated with the rigidities imposed by the maternity leave law on the employers. Some females, in turn, knowing that they will not lose the job and even will receive benefits in case of a childbirth, would decide to enter the labor forces, others – to work full-time

instead of part-time. This would lead to the increase of female labor supply at every wage level, shifting the supply curve rightward. The new equilibrium point will be at point 2 with the increased level of employment and wage level $W_2 < W_1$. However, even in countries where maternity protection laws guarantee only employment security with zero maternity benefits this imposes additional costs on employers in terms of lost investment in on-the-job training of a female workers. And the responsibility for holding the job until the woman return after the leave is also costly for employers. So, these costs decrease demand for female labor at every wage level shifting the labor demand curve leftward. And the equilibrium point in that case will be at point 3 with $L_3 < L_2$ and $W_3 < W_2$. In comparison with the initial point 1 wage level in either case will be less than that without maternity protection legislation, while the effect on female employment is rather ambiguous. It may be higher or lower than L_1 , or even equal to it when the cost of maternity leaves is passed onto female workers in full. That is when $W_3 = W_1 - C$. Assuming then that maternity protection has no direct effect on male workers (due to the fact that males are ineligible for maternity leave), it would certainly change relative labor market position of women, and to some extent eliminate (or enforce) gender discrimination in labor markets. Everything depends on the relative magnitude of discrimination embodied into the female-male labor force participation ratio and into the gender pay ratio, as well as on the impact of maternity protection on the supply (i.e. female workers) relative to its impact on the demand (i.e. employers).

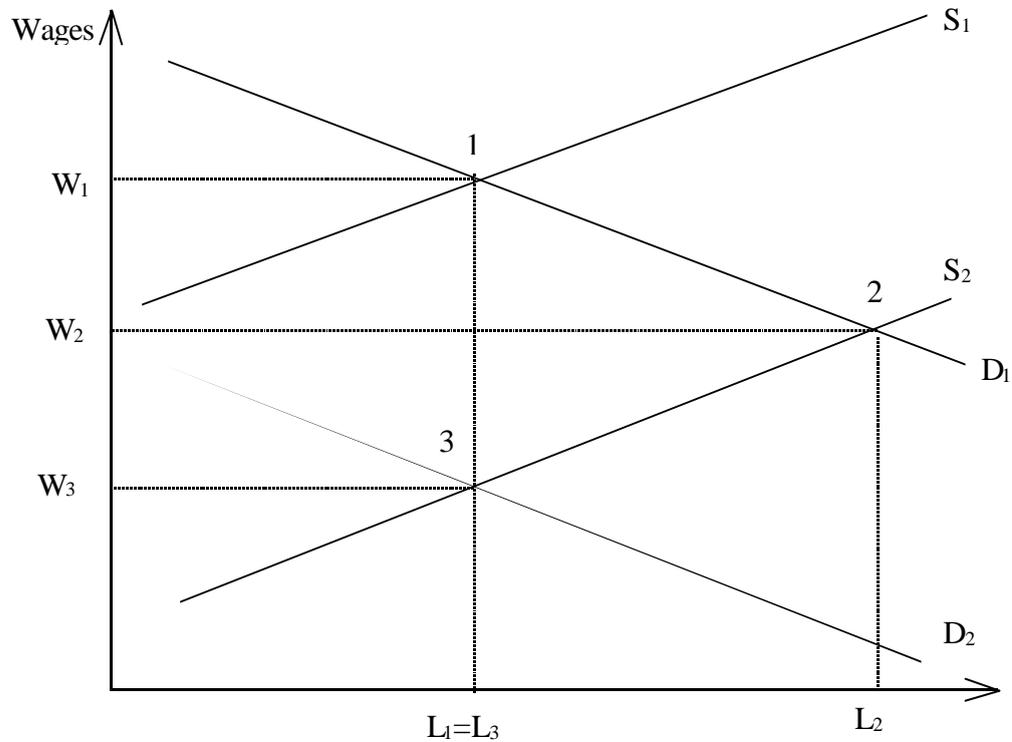


Figure 3. Labor Market: Consequences of Maternity Protection

To summarize, the possible effects of maternity leave entitlements are the following:

- improvement in the health of children (Zigler et al. 1988);
- improvement of relative position in labor markets of females with young children (Kamerman 1988);
- increase in overall level of female employment;
- increase in birth rates to socially optimal levels;
- decrease in wage level for all women.

Survey of Previous Studies Concerning Maternity Protection

Since maternity leave is a legislated time off work for eligible women, it would be interesting to consider the effect of career interruptions on labor market outcomes. Mincer and Polachek (1974) have found that time out of work has negative effect on subsequent earnings in addition to the effect of lost experience. It is worth mention that they used data for United States for the period when there was no any kind of maternity protection. They attributed this drop in earnings to the human capital depreciation.

However, Albrecht et al. (1998) in their study with the Swedish data set assert that human capital depreciation could not be the only explanation for lower subsequent female wages. They disaggregate time out into three types: formal parental leave (which includes maternity leave), household time out and unemployment. Cross-section estimates showed no effect of formal parental leave on female subsequent earnings, while household time out and unemployment showed significant negative effects. When using the full panel and controlling for individual fixed effects, difference in effects across different types of time out was eliminated although time out in unemployment continued to have stronger negative effect.

Gruber (1994) gives the estimated effect of mandated maternity benefits on subsequent wages. He used so-called «natural experiments» in the USA. His findings consistently suggested 100% shifting of the costs of mandates onto female workers, with little effect on employment.

The average effect of parental leave entitlements on overall labor market performance of females in the economy was estimated by Ruhm (1999). He investigates the economic consequences of parental leaves in 16 European countries, using data for the period from 1969 to 1988. Estimating

difference-in-difference-in-difference¹ has allowed him to measure how changes in leave entitlements affect changes in the gender gap in labor market outcomes. He concludes that:

- 1) rights for paid parental leaves do increase female employment-to-population ratio;
- 2) short-period leaves have no effect or raise female earnings, but longer paid leaves are followed by reductions in wages.

The author has mentioned several shortcomings of this research. One of them is that he did not take into account the relationship between the longevity of parental leaves and children health and education.

The attempt to analyze the effects of maternity leaves (rather than parental leaves) on fertility rates, children's health, and female labor market outcomes is made in the present study.

¹ Difference-in-difference-in-difference (DDD) model helps to measure how growth in the gender gap in labor market outcomes varies as a function of changes in leave entitlements. That is female and male labor market outcomes functions are constructed using first differences of variables, and namely the difference between these equations is the DDD specification.

Data

This analysis uses aggregate indicators for 162 countries from all over the world for the period 1980-1997.

Details on maternity protection are taken from the on-line database in *Women's Rights to Maternity Protection* (1999). Maternity leave is defined as a period before and after childbirth and is based on an immediate concern for the physical survival and health of mother and child. It is available only for women. Maternity benefits are payments related to previous earnings and paid either by employers or from social insurance and other public funds.

Dependent variables are (natural logs of) ratios of female to male labor force participation rates (LFPR), which are used as proxies for employment rates², and nominal monthly wages and salaries, as well as infant mortality rate as a proxy variable for children's health, and fertility rates. Data on LFPRs and wages are taken from the Key Indicators of the Labour Market (KILM) CD-ROM (1999). Data on mortality, birth and fertility rates, and percentage of women in tertiary education are taken from the World Development Indicators (WDI) CD-ROM (1999) provided by the World Bank.

For the analysis countries were grouped in accordance with KILM 1999: two developmental groupings - developed countries and transition economies - and four geographic groupings - Asia and the Pacific, Latin America and the Caribbean, sub-Saharan Africa, and the Middle East and North Africa. Each country appears only in one grouping (e.g. Turkey appears among the developed countries, so it is excluded from the Middle East

² Employment-to-population ratios are unavailable for most countries.

grouping). The following table presents the list of abbreviations and description of variables used.

Table 2. List of Variables

Abbreviation	Full name of a variable	Construction mechanism
R_LFPR	Ratio of female labor force participation rate to that of males	LFPR_F/LFPR_M
R_W	Female-male wage ratio	Female wage level/Male wage level
R_UR	Female-male unemployment rate ratio	Female UR/Male UR
LFPR_F	Female LFPR	
LONG	Longevity of maternity leave	
BENEFIT	Maternity benefits as a percentage of previous earnings	
WHO	Dummy variable	equal to 1 if benefits are paid fully without involvement of employers, and 0 if employers are somehow involved in maternity payments
FERT	Fertility rate, total (per woman)	
MR_I	Mortality rate, infant (per 1000 live birth)	
TED_F	Percentage of female pupils in tertiary education	
DEV	Dummy variable	equal to 1 for developed countries, 0-otherwise
TRANS	Dummy variable	equal to 1 for transition economies, 0-otherwise
ASIA	Dummy variable	equal to 1 for Asian and Pacific countries, 0-otherwise
LAT	Dummy variable	equal to 1 for Latin American and Caribbean countries, 0-otherwise
SAHAFR	Dummy variable	equal to 1 for sub-Saharan countries, 0-otherwise
NORTHAFR	Dummy variable	equal to 1 for Middle East and North African countries, 0-

Econometric Specifications

The econometric model for the relationship between the maternity leave entitlements and female labor market outcomes is taken from Ruhm (1999) with several changes in specifications and procedure applied. Labor market outcome L for each group of workers ($i=m,f$) in grouping j at time t is assumed to be determined by the following function:

$$L_{ijt} = a_i + b_{ijt} + c * X_{it} + d_i * Z_t + e_{ijt} \quad (3.1)$$

where a_i is a gender specific effect, b_{ijt} a time-varying group specific and gender specific effect, and e_{ijt} is a white noise disturbance. X is a set of variables not related to gender. Z is a set of gender-related policy variables, here: maternity leave details, such as leave duration, maternity benefits, and institution responsible for the payment. So, for male and female workers we have two equations:

$$L_{fjt} = a_f + b_{fjt} + c * X_{ft} + d_f * Z_t + e_{fjt} \quad (3.2)$$

$$L_{mjt} = a_m + b_{mjt} + c * X_{mt} + d_{mj} * Z_t + e_{mjt} \quad (3.3)$$

Subtracting (3.3) from (3.2) gives the following equation:

$$L_{fjt} - L_{mjt} = (a_f + b_{fjt} + c * X_{ft} + d_f * Z_t + e_{fjt}) - (a_m + b_{mjt} + c * X_{mt} + d_{mj} * Z_t + e_{mjt}) \quad (3.4)$$

or
$$\Delta L_{jt} = \Delta a + \Delta b_{jt} + c * \Delta X_t + \Delta d_j * Z_t + \Delta e_{jt} \quad (3.4'),$$

where Δ means female – male difference.

It has been found that the presence of children effects female labor market outcomes, while having no significant effect on those of males (Dolton and Makepeace 1987; Angrist 1996). So, it is assumed here that child-tied policies such as maternity protection, have no impact on male labor market position. This means that $d_{mj}=0$ and $\Delta d_j=d_{fj}$, i.e. the coefficients before policy variables actually measure policy impact on female labor market outcomes.

The following equation in matrix form summarizes the model to be estimated:

$$\begin{pmatrix} FERT \\ MR_I \\ Log(R_LFPR) \\ Log(R_W) \end{pmatrix}_{jt} = a_t + b * D_j * TD_t + c * X_{jt} + d_f * D_j * Z_{jt} \quad (3.5)$$

where D is a vector of regional dummies for country groupings, and X is a vector of different explanatory variables not related to gender. Z-is a vector of policy variables, such as maternity leave duration, maternity benefits, and institution responsible for maternity payments. The percentage of female students in tertiary education (with the quadratic term to reflect the diminishing effect of education) is taken as a proxy for female education, infant mortality rate is taken as a proxy for the health of children. Table 2 shows the lists of variables included in different specifications used for estimation.

Table 3.2. List of Variables Included in Different Specifications

Specification	LONG	FERT	TED_F(-3)	TED_F(-3)^2	LFPR_F	R_W	TD
(a)	✓						✓
(b)	✓		✓	✓			✓
(c)	✓		✓	✓	✓		✓
(d)	✓					✓	✓
(e)	✓	✓					✓
(f)	✓		✓	✓	✓		✓
(g)	✓	✓	✓	✓			✓

The main hypothesis to be tested is that the effects of maternity protection measures vary across groups of countries. That is why policy variables are multiplied by regional dummies.

Omitted explanatory variables could represent very important source of gender-specific time-varying factors. This source is supposed to be reduced by estimating models with region specific time trends.

Results

This section is devoted to discussion of the results obtained. The first part of this section discusses and interprets the relationship between the social and labor market outcomes and the duration of maternity leave. To test the main hypothesis four narrower hypotheses have been developed. At this point it is necessary to add that including details on maternity protection into all regressions showed that maternity BENEFIT and WHO variables have statistically insignificant impact. So, for the following analysis only the duration of maternity leave is used as a policy variable. Another issue is that estimating the effects region specific time trend and testing them for equality (F - test) has showed that there is no difference in the time trends among regions. So, for the purpose of further analysis, the effect of time is assumed to be similar across country groupings.

(1) Fertility Rate Equation

Hypothesis 1: *Maternity protection increases fertility rate by lowering the marginal cost of children ($d > 0$)*

To test this hypothesis three sets of X-variables - (a), (b), (c), (d) - were used as described in Table 3.2. As Cain and Weininger (1973) found, «fertility rates are positively related to the income of males and negatively related to the market wage of females». So including female - male wage ratio would be the appropriate step in estimation strategy (specification (d)). Since

education and female labor force participation rate are clearly related to the wage level, for the time being they are excluded from this specification. Percentage of females in tertiary education is included in other specifications (b,c) as a proxy for knowledge about the birth controls techniques.

Results for this hypothesis testing are given in the Table 4 below. As could be seen, the Hypothesis 1 could not be rejected for all the countries except for developed countries and transition economies, where the correlation between the maternity leave duration and fertility (birth) rates turns out to be negative. This may suggest that the longer the maternity leave entitlement, the higher the cost of children for female workers in developed countries and transition economies. Search cost related to returning to work after the childbirth has been considered in the *Theory* section as the main component of the cost of children, which is influenced by maternity protection measures. The fact that longer maternity leaves lead to lower fertility rates in developed countries and countries in transition may be explained using the concept of opportunity cost. Since females in those countries are on average better educated and as a result have higher market wages, longer maternity leaves may actually increase the opportunity costs of having children for them. And if this increase in the opportunity costs is not neutralized by the decrease in the search costs, the resulting negative impact from lengthening maternity leaves could be observed (exactly what has been received from regression analysis). At the same time in less developed countries maternity protection acts in accordance with the theoretical considerations, decreasing the cost of children for females and leading to higher fertility rates.

Table 4. Maternity Leave Duration and Fertility Rates

Specifications	(a)	(b)	(c)	(d)
Additional regressors	Time Trend	Education, Time Trend	Education, Female LFPR, Time Trend	Female-male wage ratio, Time Trend
Number of observations	890	514	342	180
F-statistics	360.2132	183.5547	109.7484	67.5891
LONG*DEV	-0.0453	-0.0455	-0.0250	-0.0270
s.e.	0.0012	0.0006	0.0016	0.0042
p-value	0.0000	0.0000	0.0000	0.0000
LONG*TRANS	-0.0225	-0.0289	-0.0241	-0.0241
s.e.	0.0007	0.0005	0.0013	0.0023
p-value	0.0000	0.0000	0.0000	0.0000
LONG*ASIA	0.0955	0.0155	-0.0382	0.0609
s.e.	0.0015	0.0011	0.0240	0.0352
p-value	0.0000	0.0000	0.1126	0.0852
LONG*SAHAFR	0.2657	0.1984	0.1847	0.2958
s.e.	0.0015	0.0049	0.0041	0.0056
p-value	0.0000	0.0000	0.0000	0.0000
LONG*LAT	0.0530	0.0142	0.0513	0.0832
s.e.	0.0014	0.0027	0.0041	0.0059
p-value	0.0000	0.0000	0.0000	0.0000
LONG*NORTHAFR	0.2062	0.1463	0.1694	0.1486
s.e.	0.0114	0.0164	0.0036	0.0308
p-value	0.0000	0.0000	0.0000	0.0000

The results are rather controversial, if taking into account that maternity protection measures have been first constructed in developed countries and then adopted by other countries in the world. And namely developed countries have rather low fertility rates (1-2 per woman), while some of the less developed countries, on the contrary, are trying to lower the fertility rates (China, Indonesia). The question why in countries with low fertility rates the impact of maternity leave duration on fertility rates is negative, and in countries with high fertility rates it is positive remains open

and calls for further research. However, what is obvious is that this impact is not the same across regions.

(2) Infant Mortality Rate Equation

Hypothesis 2: Maternity protection improves health of children ($d < 0$)

To test this hypothesis the same specifications as before are used (a, b, c, d).

Table 5. Maternity Leave Duration and Infant Mortality Rates

Specifications	(a)	(b)	(c)	(d)
Additional regressors	Time Trend	Education, Time Trend	Education, Female LFPR, Time Trend	Female-male wage ratio, Time Trend
Number of observations	940	528	356	193
F-statistics	277.0076	180.2656	82.0240	66.4000
LONG*DEV	-0.2953	-0.2967	-0.1461	-0.6719
s.e.	0.0418	0.0299	0.0177	0.0701
p-value	0.0000	0.0000	0.0000	0.0000
LONG*TRANS	0.0937	0.1544	0.1248	-0.0657
s.e.	0.0272	0.0240	0.0254	0.0364
p-value	0.0006	0.0000	0.0000	0.0729
LONG*ASIA	3.4894	2.1709	0.6524	5.7840
s.e.	0.1678	0.0794	0.1268	0.3952
p-value	0.0000	0.0000	0.0000	0.0000
LONG*SAHAFR	6.2038	4.2207	3.2255	5.1884
s.e.	0.0688	0.1408	0.1277	0.2495
p-value	0.0000	0.0232	0.0000	0.0000
LONG*LAT	1.0038	0.1962	0.8602	1.5580
s.e.	0.0611	0.0862	0.1278	0.1500
p-value	0.0000	0.0000	0.0000	0.0000
LONG*NORTHAFR	2.9771	1.7427	1.6194	1.5574
s.e.	0.1483	0.0959	0.1318	0.1727
p-value	0.0000	0.0000	0.0000	0.0000

The results only for developed countries support the hypothesis 2, while showing little evidence for child health improvement due to maternity protection in all other countries.

(3) Gender Pay Ratio Equation

Hypothesis 3: *Maternity protection decreases the gender pay ratio. ($d < 0$)*

The results are reported in the Table 6.

Table 6. Maternity Leave Duration and Female-Male Wage Ratio

Specification	(a)	(b)	(c)	(e)
Additional regressors	Time Trend	Education, Time Trend	Fertility Rate, Time Trend	
Number of observations		288	171	180
F-statistics		20.9703	24.7788	10.2273
LONG*DEV		-0.0111	0.0038	-0.0068
s.e.		0.0015	0.0014	0.0027
p-value		0.0000	0.0059	0.0126
LONG*TRANS		-0.0097	-0.0023	-0.0078
s.e.		0.0008	0.0009	0.0015
p-value		0.0000	0.0115	0.0000
LONG*ASIA		0.0015	-0.0028	0.0022
s.e.		0.0026	0.0075	0.0047
p-value		0.5687	0.7092	0.6319
LONG*SAHAFR		-0.0194	-0.0399	-0.0034
s.e.		0.0014	0.0046	0.0064
p-value		0.0000	0.0000	0.5950
LONG*LAT		-0.0110	0.0235	0.0010
s.e.		0.0019	0.0018	0.0040
p-value		0.0000	0.0000	0.7971
LONG*NORTHAFR		-0.0298	-0.0193	-0.0189
s.e.		0.0023	0.0019	0.0052
p-value		0.0000	0.0000	0.0004

Results from the wage equations differ across groups of countries, being completely insignificant for the countries in Asian and Pacific region. The coefficients are robust and in accordance with the hypothesis stated in transition economies and countries in North Africa and Middle East, while

sensitive to changes in specifications and sometimes insignificant for sub-Saharan and Latin America regions.

Negative coefficients before the maternity leave duration variable show that the cost of maternity protection is passed onto the female workers in developed countries, transition economies, countries of sub-Saharan region and Middle East and North Africa. This results are similar to those found by Ruhm (1999) for Western European countries.

(4) LFPR Ratio Equation

Hypothesis 4: *Maternity protection increases the female-male labor force participation rate ratio. ($d > 0$)*

Table 7. Maternity Leave Duration and Female-Male LFPR Ratio

Specifications	(a)	(e)	(g)	(e')	
Additional regressors	Time Trend	Fertility Rate, Time Trend	Fertility Rate, Education, Time Trend	Fertility Rate, Change in Gender Pay Ratio, Time Trend	
Number of observations		730	521	343	101
F-statistics		56.3462	46.9484	34.8479	24.8241
LONG*DEV		0.0099	0.0032	0.0050	0.0025
s.e.		0.0008	0.0003	0.0012	0.0008
p-value		0.0000	0.0000	0.0001	0.0042
LONG*TRANS		0.0124	0.0089	0.0058	-0.0002
s.e.		0.0005	0.0002	0.0008	0.0006
p-value		0.0000	0.0000	0.0000	0.7695
LONG*ASIA		-0.0106	-0.0090	-0.0012	-0.0349
s.e.		0.0010	0.0006	0.0021	0.0009
p-value		0.0000	0.0000	0.5488	0.0000
LONG*SAHAFR		0.0164	0.0387	0.0521	0.0489
s.e.		0.0009	0.0004	0.0050	0.0058
p-value		0.0000	0.0000	0.0000	0.0000
LONG*LAT		-0.0049	-0.0076	-0.0151	-0.0210
s.e.		0.0007	0.0003	0.0019	0.0124
p-value		0.0000	0.0000	0.0000	0.0001
LONG*NORTHAFR		-0.0508	-0.0363	-0.0392	-0.0576

s.e.	0.0015	0.0002	0.0029	0.0139
p-value	0.0000	0.0000	0.0000	0.0924

Specification (e') includes the change in female-male wage ratio as a proxy variable for change in gender discrimination in the labor market. Results presented in the Table 7 suggest the theory seems to hold only for developed countries, transition economies and countries in sub-Saharan region. For all other regions the relationship between the maternity leave duration and female-male LFPR ratio is negative, statistically significant, and robust.

Tables A1 through A6 show the econometric results by countries groupings.

Table 8 summarizes the results giving the direction of the relationship between socio-economic indicators under consideration and the maternity leave duration.

Table 8. Results of Cross-country Analysis: Direction of Correlation

	Developed countries	Transition Economies	Asia and Pacific Region	Sub-Saharan Region	Latin America	Middle East and North Africa
Fertility Rate	(--)	(--)	(+) ²	(+)	(+)	(+)
Infant Mortality Rate	(--)	(+) ²	(+)	(+)	(+)	(+) ²
Female/Male LFPR Ration	(+)	(+) ²	(--)	(+)	(--)	(--)
Female/Male Wage Ratio	(--) ²	(--)	(--) ^{1,2}	(--)	(+) ^{1,2}	(--)

Notes:¹ insignificant coefficient; ²the sign of the coefficient is sensitive to changes in specifications.

As the results of econometric investigations show there exist significant difference not only in the magnitude of the impact of maternity leave duration on fertility rate, infant mortality rate, female male LFPR ratio but also in the direction of that impact. This calls into serious question the practice of using the same policy measures in different groups of countries. Another important result is that female-male wage ratio is negatively related to the duration of the maternity leave almost for every group of countries (as theory predicted). This latter result makes it impossible to continue to believe that maternity protection helps to eliminate gender discrimination, although everything depends on the relative magnitudes of gender discrimination in different dimensions. If, for example, higher female labor force participation rate is considered to be an indicator of decreasing gender discrimination in the labor market, then theory as well as empirical analysis presented in this paper support the statement that maternity protection helps to eliminate gender discrimination. If, on the contrary, female-male wage ratio is of major concern, when measuring discrimination, then saying that maternity protection eliminates gender discrimination is supported neither by theory nor by empirical evidence. So, the net result is ambiguous and depends on the weights assigned to the wage ratios and the LFPR ratios.

Chapter 4

CONCLUSIONS

Policy Implications

This paper has attempted to analyze the consequences of the existent measures designed to alleviate the disadvantage in the labor market that is imposed on women by having children. The results are mixed following the theoretical considerations for some country groupings and violating expected hypotheses in others. So, in countries where fertility rate are rather high (Asia, Africa, Latin America) the longer maternity leaves are associated with higher fertility rates. In contrast, in developed and transition economies with the fertility rates of 1-2 children per woman the correlation is negative suggesting that there may be other more powerful factors (e.g. opportunity costs) which when combining with the maternity protection give such puzzling results. The same could be said about the infant mortality rate for which the correlation is consistent with the theory only in developed countries.

As to the gender differentials in the labor market, the results show positive impact of the maternity leave duration on the female-male labor force participation ratio in developed countries, transition economies and sub-Saharan region, rejecting the hypothesis for Asia, Latin America, and Middle East. The impact on the wage ratio turns out to be negative almost for all countries confirming the theoretical expectations above. The exception is the Latin America countries although the coefficient for them is statistically insignificant and sensitive to changes in the specification.

The policy implications of the analysis presented in this work are rather straightforward. First of all, the results of this study as to the effect of

maternity protection on female earnings [negative correlation consistent with the study on European countries by Ruhm (1999)] may suggest that the existing arrangements do not actually help to eliminate gender discrimination, as it is claimed everywhere. What is the usefulness from the maternity leave if ultimately the cost of it would be passed onto the female workers? Even if more women enter the labor force, they will hardly be better off if average wages of female workers fall everywhere.

Secondly, the differences in the results for different country groupings suggest that it is unreasonable to copy policies developed in other countries not taking into account local culture, traditions, institutions. So, the policy-makers should be more cautious when adopting policies developed by others.

Thirdly, the argument in the previous paragraph suggests for international organizations (in this case - ILO) to be more careful when advising all countries to ratify their conventions and recommendations and change local legislation in accordance with them. Of course, this will require additional, and may be considerable, efforts from these organizations to determine the impact of their suggestions for different countries. But at the end this efforts will be properly awarded by results truly beneficial for countries.

And, finally, if the theoretical considerations about the fertility rate determination presented in the *Theory* section are valid in reality, then it is clear that maternity leave arrangements should be different in countries aiming to lower fertility rates (such as India) from those in countries, which try to increase it (Japan, European countries, transition economies).

Directions for Further Research

Directions for further research could be delineated from the shortcomings and constraints of this study.

First of all, aggregate data hide the structure of the variables under consideration. So, for example it would be interesting to find out to what extent the childless female workers' wages in comparison to those of females with children is influenced by the maternity leave arrangements. And is this influence different across country groupings.

Secondly, it may be the case that the impact of maternity protection varies not only across groupings but also across countries in the same group. Unfortunately, this study requires time to be implemented because most of the countries except for developed countries have short time series of data disintegrated by gender.

A third direction arises from the validity of the assumption as to the shape of the marginal cost of children curve for different groups of females (e.g. educated and uneducated). Actually it may be flatter for less educated women suggesting stronger positive effect of maternity protection on their fertility rates. If this is true, then the impact of maternity leave duration may differ also within countries.

A fourth issue is that the analysis of parental leave impact in addition to that of maternity leave could add strengths to the research. It is provided to either mother or father in many developed countries as well as transition economies. However, it is taken mainly by mothers (except for in Sweden). So, it may be of help when explaining differences in the results for developed countries and transition economies vis-à-vis the rest of the world.

And, finally, adding the information about the percentage of workers in each country eligible for the leave (either maternity or parental) and the rate of actually taken leaves will be of help to properly estimate the maternity protection impact. All these are the important areas for further research.

In conclusion, this study could be considered as an attempt to analyze the “children-women-society” interrelation using basic economic tools and determine whether the impact of child-centered policies (here, maternity leave laws) varies across six country groupings: developed countries, transition economies, Asian, Latin America, sub-Saharan, and Middle East countries. The main finding is that the maternity leave duration impacts on such indicators as fertility rates, infant mortality rates, and female labor force participation rates do differ across country groupings. At the same time the fact that female wages are negatively associated with the duration of maternity leave everywhere suggests that the costs of this policy measure have been passed onto females. These findings call for further detailed research to investigate the impact of existing policy measures on different groups of female workers in different countries within the same country grouping.

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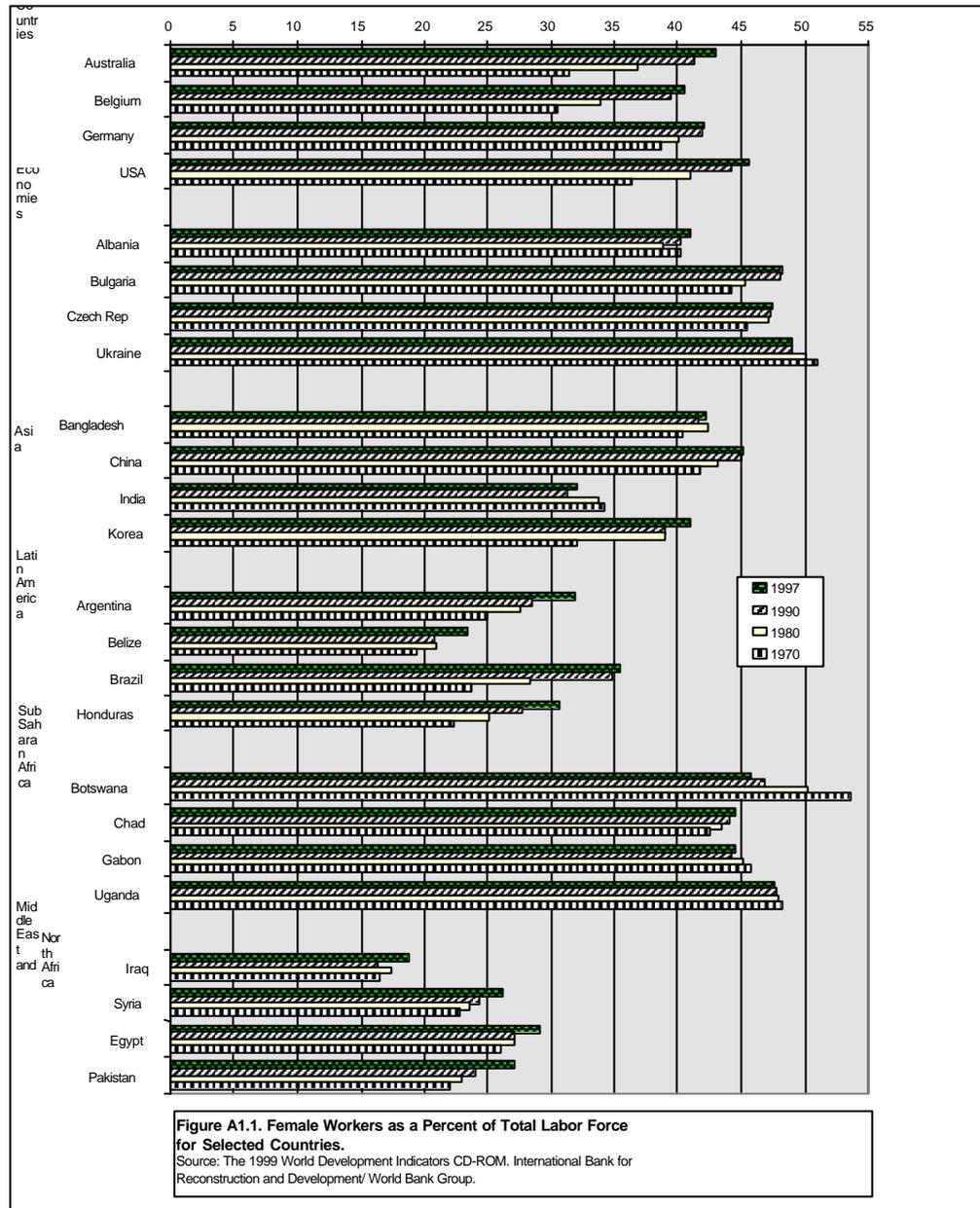
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Data Sources

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Appendix



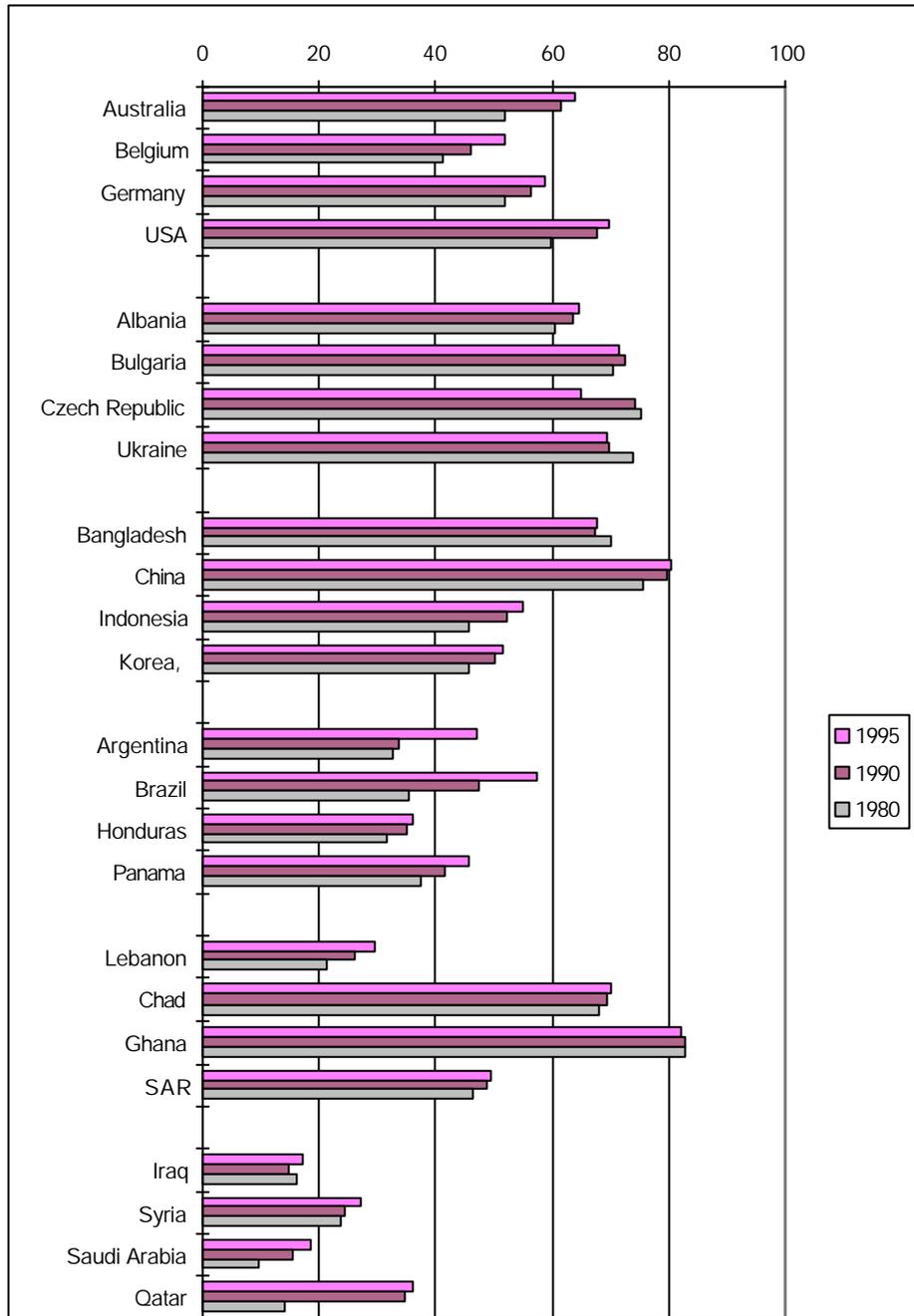


Figure A1.2. Female Labor Force Participation Rate (% of female population)
 Source: The 1999 Key Indicators of the Labour Market CD-ROM. International Labour Force Organization.

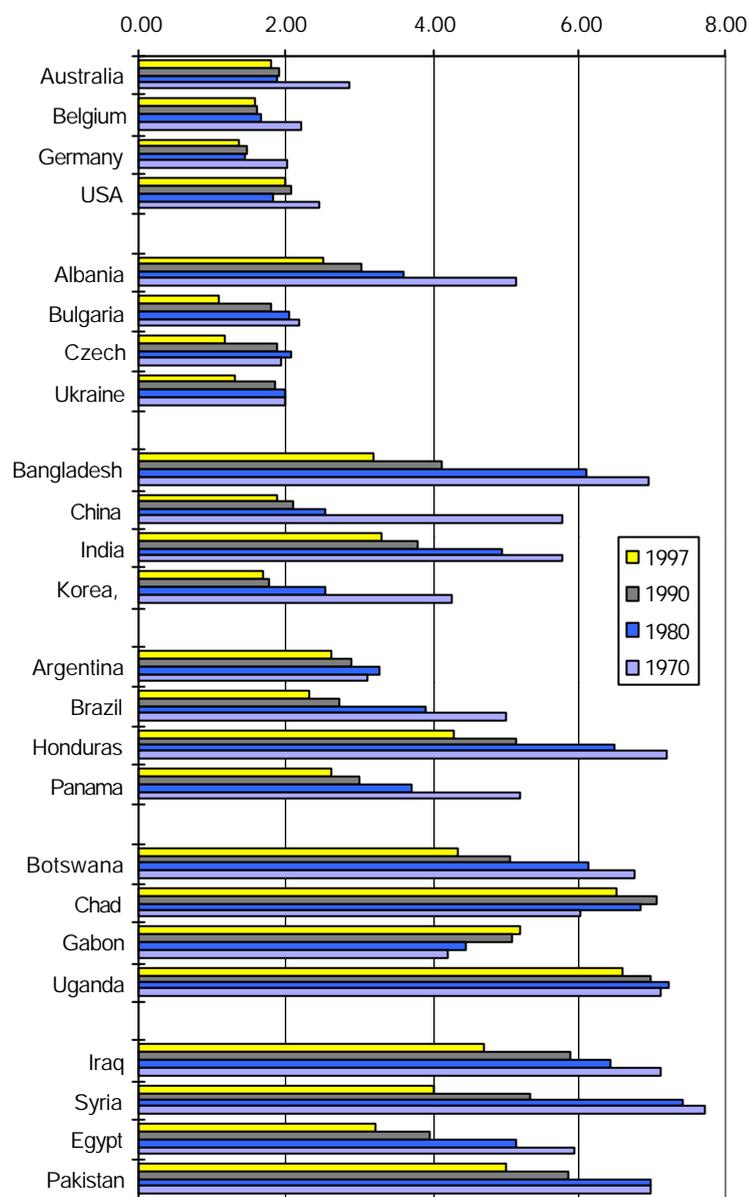
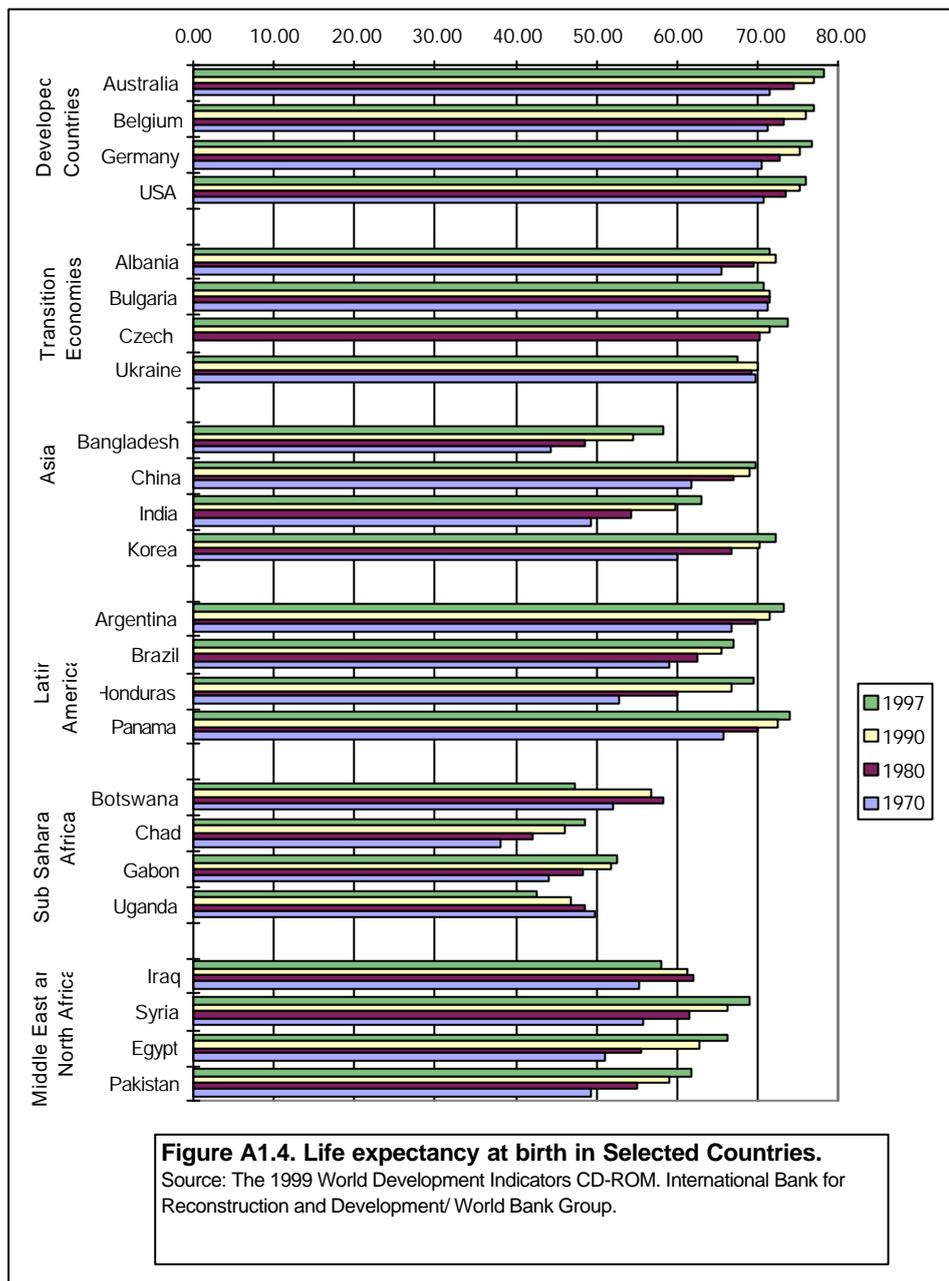


Figure A1.3. Fertility Rate (births per woman) in Selected Countries.
 Source: The 1999 World Development Indicators CD-ROM. International Bank for Reconstruction and Development/ World Bank Group.



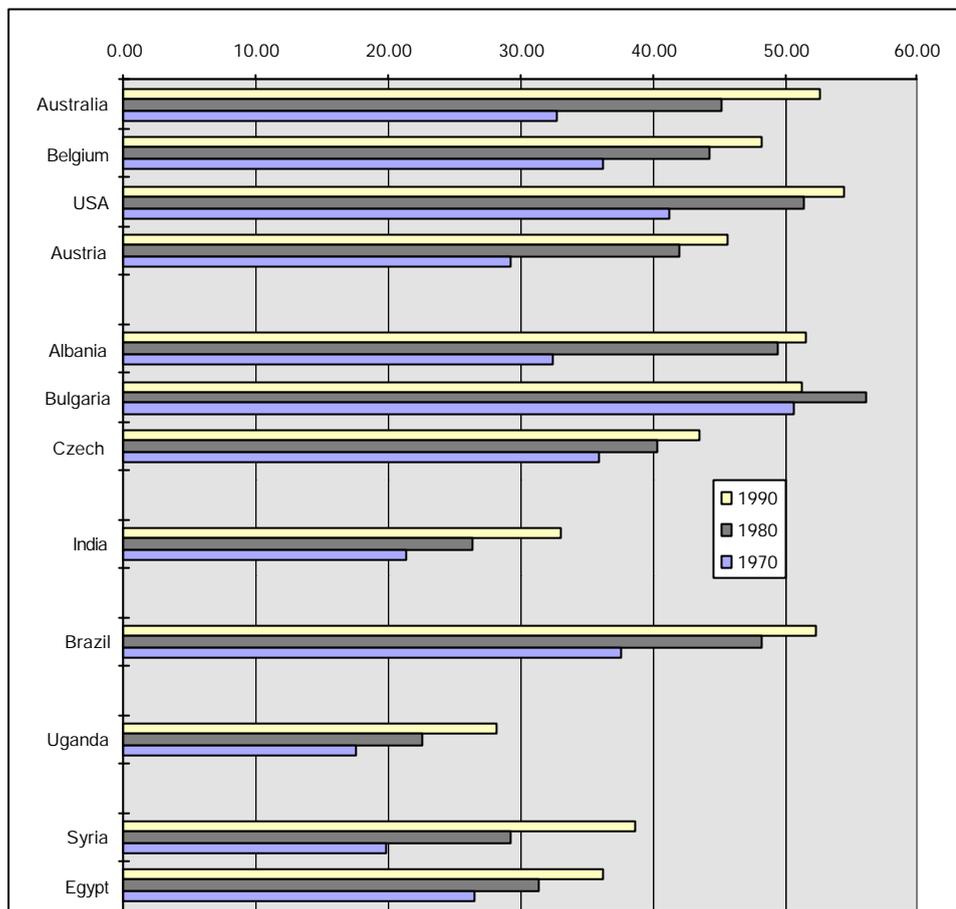


Figure A1.4. Females in Tertiary Education (%), selected countries
 Source: The 1999 World Development Indicators CD-ROM. International Bank for Reconstruction and Development/ World Bank Group.

Table A3.1: Estimates of Maternity Leave Duration Impact in Countries of Middle East and North Africa Region.

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	Female-male Wage Ratio*
(a)	0.2062	-0.0121	-0.1816	-0.0508	-0.0298
s.e.	0.0114	0.0169	0.0533	0.0015	0.0023
p-value	0.0000	0.4734	0.0007	0.0000	0.0000
(b)	0.1463	-0.1037	1.7427		-0.0193
s.e.	0.0164	0.0165	0.0959		0.0019
p-value	0.0000	0.0000	0.0000		0.0000
(c)	0.1694	0.2150	1.6194		
s.e.	0.0036	0.0049	0.1318		
p-value	0.0000	0.0000	0.0000		
(d)	0.1486	1.0728	1.5574		
s.e.	0.0308	0.0481	0.1727		
p-value	0.0000	0.0000	0.0000		
(e)				-0.0392	-0.0189
s.e.				0.0029	0.0052
p-value				0.0000	0.0004
(e')				-0.0576	
s.e.				0.0139	
p-value				0.0924	
(g)				-0.0363	
s.e.				0.0002	
p-value				0.0000	

Table A3.2: Estimates of Maternity Leave Duration Impact in Developed Countries

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	Female-male Wage Ratio*
(a)	-0.0453	-0.0637	-0.0895	0.0099	-0.0111
s.e.	0.0012	0.0026	0.0268	0.0008	0.0015
p-value	0.0000	0.0000	0.0009	0.0000	0.0000
(b)	-0.0455	-0.0891	-0.2967		0.0038
s.e.	0.0006	0.0024	0.0299		0.0014
p-value	0.0000	0.0000	0.0000		0.0059
(c)	-0.0250	-0.0611	-0.1461		
s.e.	0.0016	0.0040	0.0177		
p-value	0.0000	0.0000	0.0000		
(d)	-0.0270	-0.2748	-0.6719		
s.e.	0.0042	0.0323	0.0701		
p-value	0.0000	0.0000	0.0000		
(e)				0.0050	-0.0068
s.e.				0.0012	0.0027
p-value				0.0001	0.0126
(e')				0.0025	
s.e.				0.0008	
p-value				0.0042	
(g)				0.0032	
s.e.				0.0003	
p-value				0.0000	

Table A3.3: Estimates of Maternity Leave Duration Impact in Transition Economies

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	Female-male Wage Ratio*
(a)	-0.0225	-0.1056	0.0937	0.0124	-0.0097
s.e.	0.0007	0.0051	0.0272	0.0005	0.0008
p-value	0.0000	0.0000	0.0006	0.0000	0.0000
(b)			0.1944		-0.0023
s.e.			0.0246		0.0009
p-value			0.0000		0.0115
(c)	-0.0236	-0.2066	0.3905		
s.e.	0.0003	0.0079	0.0312		
p-value	0.0000	0.0000	0.0000		
(d)	-0.0289	-0.2131	0.3836		
s.e.	0.0005	0.0083	0.0315		
p-value	0.0000	0.0000	0.0000		
(e)				0.0058	-0.0078
s.e.				0.0008	0.0015
p-value				0.0000	0.0000
(e')				-0.0002	
s.e.				0.0006	
p-value				0.7695	
(g)				0.0089	
s.e.				0.0002	
p-value				0.0000	

Table A3.4: Estimates of Maternity Leave Duration Impact in the Countries of Asian and Pacific Region.

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	
(a)	0.0955	0.1814	1.8684	-0.0106	0.0015
s.e.	0.0015	0.0059	0.0664	0.0010	0.0026
p-value	0.0000	0.0000	0.0000	0.0000	0.5687
(b)	0.0155	0.1912	2.1709		-0.0028
s.e.	0.0011	0.0048	0.0794		0.0075
p-value	0.0000	0.0000	0.0000		0.7092
(c)	-0.0382	0.1691	0.6524		
s.e.	0.0240	0.0224	0.1268		
p-value	0.1126	0.0000	0.0000		
(d)	0.0609	0.7309	5.7840		
s.e.	0.0352	0.2568	0.3952		
p-value	0.0852	0.0049	0.0000		
(e)				-0.0012	0.0022
s.e.				0.0021	0.0047
p-value				0.5488	0.6319
(e')				-0.0349	
s.e.				0.0009	
p-value				0.0000	
(g)				-0.0090	
s.e.				0.0006	
p-value				0.0000	

Table A3.5: Estimates of Maternity Leave Duration Impact in the Countries of sub-Saharan Region.

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	Female-male Wage Ratio*
(a)	0.2657	0.1577	1.9576	0.0164	-0.0194
s.e.	0.0015	0.0068	0.0900	0.0009	0.0014
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
(b)	0.1984	0.1306	4.2207		-0.0399
s.e.	0.0049	0.0059	0.1408		0.0046
p-value	0.0000	0.0000	0.0232		0.0000
(c)	0.1847	-0.1341	3.2255		
s.e.	0.0041	0.0236	0.1277		
p-value	0.0000	0.0000	0.0000		
(d)	0.2958	1.8752	5.1884		
s.e.	0.0056	0.0431	0.2495		
p-value	0.0000	0.0000	0.0000		
(e)				0.0521	-0.0034
s.e.				0.0050	0.0064
p-value				0.0000	0.5950
(e')				0.0387	
s.e.				0.0004	
p-value				0.0000	
(g)				0.0489	
s.e.				0.0058	
p-value				0.0000	

Table A3.6: Estimates of Maternity Leave Duration Impact in Latin American Countries.

	Fertility Rate*	Birth Rate	Infant Mortality Rate	Female-male LFPR Ratio	Female-male Wage Ratio*
(a)	0.0530	0.1952	0.1416	-0.0049	-0.0110
s.e.	0.0014	0.0058	0.0333	0.0007	0.0019
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
(b)	0.0142	0.1669	0.1962		0.0235
s.e.	0.0027	0.0210	0.0862		0.0018
p-value	0.0000	0.0000	0.0000		0.0000
(c)	0.0513	-0.1651	0.8602		
s.e.	0.0041	0.0225	0.1278		
p-value	0.0000	0.0000	0.0000		
(d)	0.0832	0.5651	1.5580		
s.e.	0.0059	0.0323	0.1500		
p-value	0.0000	0.0000	0.0000		
(e)				-0.0151	0.0010
s.e.				0.0019	0.0040
p-value				0.0000	0.7971
(e')				-0.0076	
s.e.				0.0003	
p-value				0.0000	
(g)				-0.0210	
s.e.				0.0124	
p-value				0.0001	