No. 1807

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HUMAN RESOURCES

ISSN 0265-8003

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Discussion Paper No. 1807
February 1998

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CEPR Discussion Paper No. 1807

February 1998

ABSTRACT

The Extra Burden of Moslem Wives: Clues from Israeli Women's Labour Supply*

This paper examines differences in the labour supply of women of different religions in Israel. We estimate religious differentials in the effect of husband's income, number of children, education, and age on married women's labour supply. It is suggested that labour supply patterns of wives from different religious backgrounds may reveal differences in the institutions which different religious groups have established to regulate marriage and divorce. Our results suggest that Christian marital institutions are closer to Jewish marital institutions than they are to Moslem marital institutions. Moslem women appear to be less likely to translate their resources into a higher value of time in marriage than either Christian women or Jewish women. Educated Moslem women seem to have fewer constraints on their marriages than their uneducated counterparts.

JEL Classification: J12, J15, J21, J22
Keywords: labour force participation, Israel, marriage, religion

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*This paper is produced as part of a CEPR research programme on *Product Market Integration, Labour Market Imperfections and European Competitiveness*, supported by a grant from the Commission of the European Communities under its Human Capital and Mobility Programme (no. ERBCHRXCT930235).

Submitted 5 December 1997

NON-TECHNICAL SUMMARY

There is very little quantitative evidence on the value of individuals' time in marriage, and even less on how religion affects women's value of time in marriage. To compare women's value of time in marriage cross-culturally, one can examine ethnographic evidence, a very subjective methodology. Alternatively, one can study laws and customs, but that does not tell us much about how laws and customs actually affect people's lives, especially if groups differ in a variety of laws which can possibly have opposite effects. This paper uses findings on religious differentials in the labour supply of married women to infer insights on how women of different religions are treated in marriage. The data we analyse are for women belonging to the three major religions in Israel: Judaism, Islam and Christianity.

The idea that labour supply and wage can provide clues on value of time in the home is central to the modern study of labour supply. The most popular economic theory that places labour supply in the context of the family is the Becker/Mincer theory of household production. Traditionally, this theory takes household composition as given and ignores marriage market forces and bargaining inside the household.

The importance of ethnicity and religion as influences on labour supply has been recognized in empirical models. However, neither religion nor ethnicity have been analysed by economists as factors influencing the institutional setting regulating the ways individuals trade time at work for time in household production. Taking account of such institutional setting makes sense from the perspective of the economic theory of marriage inspired by Becker and developed by Grossbard-Shechtman.

Religions such as Islam, Christianity and Judaism recommend institutions which influence the marriages of people living in a given culture. First, we discuss five aspects of marriage institutions which differ across Israeli religious groups and which are expected to affect value of time in marriage principally via their effects on the demand and supply of brides and grooms and therefore market value of time in marriage. This includes gender-asymmetric rules regarding exogamy, and laws about polygamy and divorce. Next, we discuss aspects of marriage institutions which have an impact on whether a market mechanism or a command mechanism regulate the allocation of brides and grooms into marriages: endorsements and punishments of physical domestic violence and ability of parents to force children into marriage. A further institutional feature of marriage often associated with religion – the use of

bridewealth payments – may indicate whether women in a particular group are compensated below or above the market value of their time in marriage. This list of marriage institutions related to religion and which are possibly related to individual value of time in marriage could easily be expanded or modified depending on the cultural context.

We then reason backward. We do not observe value of time in marriage, but we do observe labour supply, a function of value of time in marriage. Therefore, by comparing labour supply patterns across various individuals or groups, we can infer comparisons of value of time in marriage. We then derive rules of inference comparing cultures A and B, two different religious groups, nationality, or ethnic group. These rules of inference compare the value of time of married women in both cultures. They also compare the effect of husband's income, number of children, education, and age on women's labour supply and by inference on women's value of time in the home.

Our findings indicate that women belonging to religious groups with different marriage institutions appear to behave differently in the same national labour force. More specifically, the effects of husband's income, number of children, and age on Moslem women's labour supply were weaker than for Jewish women. The effects of wife's schooling and husband's income on Moslem women's labour supply were also significantly different from these effects for Christian women. Only the effect of children on Christian married women's labour supply differed significantly from the effect for Jewish women. We relate these findings to the contrast between laws and customs regulating marriage and divorce among Moslem Israelis and the equivalent laws and customs found among Christians and Jews in Israel. Christian Arab Israeli marriage institutions regulating marriage and divorce appear to resemble more the institutions regulating marriage and divorce among Israeli Jews than the institutions regulating marriage and divorce among Moslem Arab Israelis. Moslem women appear to be less likely to translate their resources into a higher value of time in marriage than either Christian women or Jewish women. This conclusion does not appear to hold for educated women, however.

Our economic analysis of religious institutions, marriage, and labour supply strengthens interpretations of religious institutions as products of political and historical factors. Both in the (Christian) West and the Moslem East there is a tendency to think about religion in black and white and to categorize Moslem religious institutions as rigid obstacles to modernity. We find that educated Moslem Arab Israeli women seem to have achieved some success at using their education towards the achievement of higher values of time in marriage

relative to their non-Moslem counterparts. This possibly indicates that religious institutions related to marriage are not rigid, but instead respond to changes in what people want from marriage as they become more educated.

This study opens new avenues for related empirical research. It would be appropriate to apply the theoretical inferences and empirical methodology presented here to comparisons between other groups, whether they are classified by religion, ethnicity, or class and whether they are located in Israel or in any other country such as the United States. It is possible that our results showed significant religious differences due to the clear differences in lifestyle between various religious groups in Israel, who live in separate institutional settings. Israel has few national laws governing marriage and divorce for all citizens. Other comparisons will indicate whether the results we show are valid elsewhere. For instance, it will be interesting to compare Israeli Jews from the West and from Arab countries, or blacks and whites in the United States.

Finally, this analysis makes a strong case for integration between marriage theory and labour supply theory. We can learn more about labour supply by analysing marriage, and more about marriage by analysing labour supply. Marriage institutions influence labour behaviour. Our findings indicate that it is not simply husband’s income which influences wife’s labour supply, but rather the amount of husband’s income reaching the wife which influences her labour supply. Marriage institutions apparently govern the degree to which husbands and wives share their income. This is one of the many ways by which marriage influences labour supply.

1. Introduction

This paper offers an empirical study of labor supply among married women belonging to the three major religions in Israel: Judaism, Islam, and Christianity. In addition, this paper offers clues on how religion affects women's value of time in marriage by examining religious differentials in the effect of husband's income, number of children, education, and age on women's labor supply. There are no direct means of accurately estimating value of time in marriage. To compare women's value of time in marriage cross-culturally, one can examine ethnographic evidence, a very subjective methodology. Alternatively, one can study laws and customs, but that does not tell us much about how laws and customs actually affect people's lives, especially if groups differ in a variety of laws which are expected to have opposite effects.

The idea that labor supply and wage can provide clues on value of time in the home is central to the modern study of labor supply. Labor economics recognizes the importance of family and home. Any estimation of married women's labor force participation takes account of presence of children and estimates the effect of husband's income on wife's labor supply. The most popular economic theory of labor supply including a family context is the Becker/Mincer theory of household production,[1] which views women and men as producers of valuable 'commodities' in the home. Accordingly, value of time in the home is modelled as a function of productivity in the home, in turn a function of education and age, and of household's demand for an individual's time in home production, e.g. a function of income. Traditionally, this theory takes household composition as given and ignores marriage market forces and bargaining inside the household.

The importance of ethnicity and religion as influences on labor supply has been recognized in empirical models. For instance, most studies of women's labor force participation in the United States distinguish between Black and White women' behavior. Religion is included less often in empirical studies of labor supply in the United States, in part because of lack of data. Recent empirical studies using U.S. data indicate that it is an important variable.[2] Some empirical models indicate that ethnicity/religion and socio/economic variables interact in affecting labor supply, but these interaction terms have not been elaborated on in terms of an economic theory of marriage. [3]

This study offers a new way of interpreting religious differentials in the impact of women's schooling, age, number of children, husband's income and husband's schooling on women's labor supply. Religious groups differ in the institutions they create to regulate marriage and divorce. In section 2 we derive rules of inference which enable us to learn more about how such institutions influence women's (and men's) value of time in marriage based on patterns of labor supply.

Section 3 applies our insights to a sample of Israeli women belonging to the three major religious groups found in Israel: Jews, Moslems, and Christians. That section outlines the descriptive and statistical analysis and presents our findings. Our major finding is that the labor supply patterns of Christian Arab Israeli women resemble that of Jewish women more than that of Moslem Arab Israeli women. Given that such resemblance does not follow from institutional differences in labor markets, we conclude that institutional differences in marriage do play a role in explaining variations in labor supply across the religious groups. Our findings suggest that Moslem Israeli women living in a traditional setting find it relatively harder to translate their personal resources into a higher value of time in marriage than Jewish or Christian women in

Israel, that there are only minor differences between the value of time in marriage of Jewish and Christian women, and that the contrast between Moslem Israeli women and other Israeli women seems to dwindle at higher educational levels.

2. Labor Supply and Marriage Institutions

In this section, we explain why laws, customs and other institutions which influence marriage and divorce may influence labor supply. Some marriage institutions which may possibly distinguish the major religions represented in Israel are discussed. Five rules of inference are derived. These will help us in using findings regarding the determinants of labor supply in order to obtain clues regarding cultural variations in the relative status of women in marriage.

A New Institutional Perspective on Labor Supply. Economic models of labor supply are based on the assumption of rational choice and view the decision to enter the labor force as a comparison between the attractiveness of work, measured by the wage or potential wage, and the attractiveness of staying home, which is typically called the reservation wage. Labor force participation tends to occur if the wage for outside labor exceeds the reservation wage, i.e. $w > w^*$.

Rational choice theories such as the Becker/Mincer theory focus on individual differences in resources, assuming that the institutional framework remains constant for all individuals being compared cross-sectionally or over time. The bulk of the economic literature on this subject makes this assumption and focusses the analysis on **individual** characteristics which affect either the wage rate w, the reservation wage w^*, or both.

Marriage and family have been incorporated into labor economics in the context of rational choice models taking the institutional background as given. Economic models

of women's labor supply have included husband's income, number of children, and age of children, all variables that are expected to influence labor force participation via their effect on reservation wages. In households with either more income or more children, there is a higher demand for a married woman's time in household production, and therefore her reservation wage is higher.

Other factors included in such models, such as education and age, are expected to influence both the wage and the reservation wage. Younger and more educated women may be in higher demand in labor markets, leading to higher wages. They could also be more productive in household production, leading to higher reservation wages. The net predicted effect of education and younger age on labor force participation (controlling for other factors) is therefore ambiguous. It will depend on whether the effect on wage exceeds the effect on reservation wage, or vice-versa.

Household production models which lead to the above insights take many factors for given. Households are assumed to exist and not to change marital status. Even though Gary Becker is a major architect of the household production theory of labor supply and also authored a pioneering economic analysis of marriage, he never tied the home production based theory of labor supply with his theory of marriage.[4] Consequently, economic analyses of marriage based on the Becker framework have led to few new insights regarding the effect of marriage and marriage markets on reservation wage.[5] This may explain why most recent empirical research on labor supply, which has been heavily influenced by Becker/Mincer theories, are typically unaware of the potential impact of marriage **institutions** on the labor supply behavior of members of different cultures.

Another intellectual tradition among labor economists emphasizes the role played by institutions. Typically, labor economists focus their attention on labor institutions

such as labor unions. National policies affecting labor supply--such as child care policies--or labor demand also receive plenty of attention. It is that line of thought which has led cross-country and time series empirical studies of women's labor supply to take account of differences in laws and policies such as family leaves and child care subsidies. However, the institutional tradition in labor economics is mostly unaware of the possible role played by the marriage institutions which regulate the lives of people living in a given culture, especially if cultures coexist within the same country. Culture varies not only with nationality, but also with ethnicity, language and religion.

Culture and nationality may influence individual labor supply via (1) individual preferences, such as preference for children or discrimination against certain groups (2) individual resources, (3) institutional aspects of labor markets, (4) national family-related policies. A fifth avenue by which culture possibly affects labor supply is through the impact of culture on marital institutions. This avenue has received little attention in labor economics in the past.

Marriage Institutions. The reservation wage is a function of marriage market and bargaining-in-marriage conditions.[6] Assuming men earn more than women, access to husband's income can be viewed as a material compensation for a woman's value of time in marriage. The higher the value of time, the higher this compensation, and the higher the reservation wage. The higher the reservation wage, the less married women are likely to participate in the labor force. Reservation wage and labor supply vary with conditions in marriage markets and rules for bargaining in marriage, which in turn depend on institutional constraints imposed by culture.

Religion and Marriage. Religions such as Islam, Christianity, and Judaism, recommend institutions which influence the marriages of people living in a given culture. These institutions include laws, customs, and the means to enforce these. It is

noteworthy that none of these world religions has exactly the same institutions in every country where they are represented. For instance, Moslem Arabs are different from Moslem non-Arabs, and there are significant differences in the institutions found among Moslem Arabs living in different countries.[7] If one wants to compare religious groups, it is preferable to hold such comparison within a given country and at a given time.

The following marriage institutions related to religion are expected to affect value of time in marriage. Each of these institutions is predicted to have its own singular effect on marriage market value of women and on bargaining power in marriage. Women's actual value of time in marriage depends on the total effect of all institutions found in a given culture, and is also a function of the prevalence of a market mechanism in the allocation of brides and grooms into marriages. The next five institutions are principally going to affect demand and supply of brides and grooms and therefore market value of time in marriage.

1. Religious groups may differ in the value they place on having children, and especially on having large numbers of offspring. To the extent that in a particular religion men value children more than elsewhere, their aggregate demand for women as procreators would be larger, and therefore for any given supply, the market value of time of women in marriage is expected to be higher. In Israel, fertility norms seem to be much higher for Muslems than for Jews or Christians. According to the Statistical Annual of Israel, in the period 1980-1984 the fertility rate among all Moslem women stood at an average of 5.54, while it was 2.80 for Jewish women and 2.41 for Christian women. In the past ten years fertility has declined among all groups, with the fastest decreases observed for Moslems and Christians. By 1994, the fertility rate stood at 4.60 for Moslem women, 2.60 for Jewish women and 2.04 for Christian women.

2. Also, religious groups may differ in their rules about age at marriage of men and women.[8] In all societies, on average husbands are older than wives. Where the average age difference at marriage between husbands and wives tends to be larger one expects that the value of young women in the marriage market will be higher, as men over a wider continuum of ages are competing for young women than is the case among groups where young men and women typically marry each other. Groups with large age differences at marriage also often have strong male preferences for virginity in women, which can add to the value of time of young women in marriage markets. (However, women may never see this value, as discussed in points 6 and 7). In groups which encourage marriages between young women and old men, older women's market value of time in marriage will be lower than in groups which do not do this, older women being particularly vulnerable to competition from younger women. From this point of view the differences between the various religious groups in Israel are not dramatic. The Statistical Annual of Israel states that in 1983 on average at first marriage Jewish husbands were 2.9 years older than their wives, Moslem husbands 3.3 years older than their wives, and Christian husbands 4.3 years older than their wives. Women's average age at first marriage was 23.1 amongst Jews and Christians, while it was 20.8 among Moslems. The Statistical Annual also reports that in the period 1980-84 24% of all Jewish women had entered their first marriage by age 19, whereas 56% of all Moslem women had entered their first marriage by age 19 (No comparable statistic was available for Christian women). Also, 3.9% of Jewish men and 7.7% of Moslem men were above age 35 at first marriage. This indicates a higher proportion of Moslem marriages involving teenage wives and possibly a higher proportion of Moslem marriages involving large age differences at marriage.

3. Furthermore, religious groups (and other groups, such as Indian castes) often have gender-asymetric rules regarding exogamy, marriage outside one's group. For instance, their religion does not impose restriction on Moslem men's marriages to non-Moslem women. In fact, it is even considered commendable when they marry non-Moslems. In contrast, Moslem women are not supposed to marry outside their religion. This asymmetry will hurt women's market value of time in marriage. This institutional aspect is related to the next institution.

4. Religions often determine rules for divorce: whether divorce is permitted or not, under what circumstances, who gets custody rights over children, etc. Many countries recognize such religious laws, as was the case in Italy until recently. In Israel, everybody has to follow marriage and divorce laws of one of the major religions. The divorce laws found in some religions seem to be relatively more favorable to husbands than the laws of other religions. For instance, according to the Koran, custody over children is clearly allocated to the husband at divorce, whereas the opposite is generally the case among Christians and Jews. This institutional feature interacts with the laws of exogamy discussed in the previous point. The possible costs of an interfaith marriage--being alienated from one's children's religion--are lower for men who expect to obtain child custody rights and higher for women marrying men who are expected to get child custody rights.[9] Any divorce law favoring men implies a lower value of time for women than is the case for women living in cultures where rules are more gender-symmetric.[10]

5. Some religious groups permit polygamy, whereas others do not. The availability of polygamy for men but not for women translates in a higher men's demand for women's time in marriage and at home, leading us to expect that under a polygamous regime women's market values in marriage and married women's reservation wages will

exceed those of women in a monogamous regime.[11] Whether women in societies which allow polygamy actually have a value of time in marriage exceeding that of comparable women in monogamous societies does not follow, as there may be other institutional differences going in the opposite direction.[12]

The next two kinds of institutions principally influence whether a market mechanism or a command mechanism regulate the allocation of brides and grooms into marriages. Where the command mechanism prevails, one expects more divergence from (free) market value of time in marriage.

6. Religious groups also differ in their endorsements and punishments of physical domestic violence. Where men feel free to kill their female relatives over issues of sexual behavior (husbands killing wives and fathers killing daughters), due to light or non-existant punishment for such murderers, women's freedom to make their own marriage choices will be limited, leading to women's inability to capture the market value of their time as wives. Forced elopement is another institutional feature involving violence against women which accomplishes the same result.

Violence implies command and prevents its victims from capturing their market value of time. The more prevailing violence against women in a culture, the lower women's actual value of time in marriage. It is possible that the endorsement of male domestic violence is more prevalent in cultures and in situations where the market value of women's time would otherwise be very high, such as polygamous societies and in a situation of marriage between a young virgin and an old rich man in a culture promoting the ideal of virginity.

7. Religious groups differ in their endorsement of forced marriage, which is related to the use of parental violence. To the extent that parents (usually fathers) have to force their children to marry a certain mate, either bride or groom is likely to receive less than

their market value of time in marriage. Alternatively, the parent and the child may have a preference for a different mix of monetary and non-monetary compensation for value of time in marriage. In cultures where people are more likely to marry spouses forced on them by their relatives one expects more divergence between actual and market value of time in marriage. This may especially hurt young women's value of time in marriage. To the extent that institutions are created as a response to pressures from interest groups, men are more likely to impose mechanisms of forced marriage where the market value of young brides is especially high and they stand to gain more from interfering with market mechanisms.

A further institutional feature of marriage often associated with religion may indicate whether women in a particular group are compensated below or above the market value of their time in marriage.

8. In cultures where marriages entail bridewealth payments, i.e. transfer payments prior to marriage from the groom and his family to the bride's family, women's compensations in marriage are likely to be below the market value of their time in marriage. In contrast, dowry payments at marriage by the bride and her relatives may compensate for above-market level compensations for women's time in marriage.[13]

We have focussed on institutions that could possibly help us interpret our findings. Depending on the context, one may expand this list of marriage institutions possibly related to individual value of time in marriage.

Infering Value of Time in Marriage from Labor Supply. We now reason in reverse order.[14] There is no direct way of estimating reservation wage, and certainly not value of time in marriage. We do observe labor supply, however, which is a function of reservation wage. Therefore, by comparing labor supply patterns across various individuals or groups, we can infer comparisons of reservation wage and value of time

in marriage. In the following discussion, culture A or B stands for a religious group, nationality, or ethnic group.

> RULE OF INFERENCE #1. If married women of culture A are found to participate less in the labor force than married women of culture B, we may infer that (1) the reservation wages of married women are higher in culture A than in culture B, and (2) marriage institutions of culture A have caused a higher value of women's time in marriage.

These two inferences do not necessarily follow. We recognize that instead of step (1) we could infer that wages available to women in culture A are lower. Instead of step (2) we could infer that in culture A fewer women are available for marriage. Even if the link connecting married women's labor force participation to value of time in marriage is not very strong, it exists and deserves to be analyzed.

Rule of inference #1 considered all women in a given culture as a being part of a homogeneous marriage market. In every culture, marriage market values vary with individual characteristics, such as education, age and income. The value of time in marriage of people with valuable characteristics is expected to be higher, due to both market forces and bargaining in marriage. In a culture where marriage markets function freely, with little regulation through coercive marriage institutions, one expects wide variations in the value of time in marriage of women of varying characteristics. In contrast, where marriage institutions coercive to women lead women to receive less than their market value of time in marriage, one expects such coercion to hurt first and foremost the women who would otherwise receive higher compensations for the value of their time in marriage.

Husband's Income. Valuable characteristics make women more desirable as marriage partners. Women with such charateristics are more likely to marry rich men.

Therefore, we expect less of a gap between the value of time of women married to rich husbands and the value of time of women married to poor husbands in a culture where marriage institutions are coercive to women than in a culture with relatively free marriage markets.[15] Less variation in value of time by husband's income implies less variation in reservation wage by husband's income and therefore less variation in married women's labor force participation by husband's income. Reversing the order of reasoning,

> RULE OF INFERENCE #2. If married women's labor force participation is found to be less sensitive to husband's income in culture A than in culture B, we may infer that (1) the reservation wages of married women in culture A vary less by husband's income than in culture B, and that (2) marriage institutions of culture A prevent the value of women's time in marriage from reaching high levels, even where husbands earn a high income.

Another factor one expects to be positively associated with the value of a woman's time in marriage is **number of children**.[16] One expects a positive association between number of children and reservation wage of women, and a negative association with labor force participation. [17] The effect of number of children on women's value of time in marriage and labor force participation is expected to be lower in a culture with institutional mechanisms favoring men such as pro-husbands custody laws. Again, we can infer clues about the effect of children on women's value of time in marriage by examining their effect on labor supply:

> RULE OF INFERENCE #3. If the labor force participation of married women of culture A is found to be less sensitive to number of children than is the case in culture B, we may infer that marriage institutions of culture A prevent

women with more children from obtaining the higher value of time in marriage they might have obtained had they lived in culture B.

Next, we consider two characteristics which are expected to affect both women's reservation wage and their wage.

Age. Women above a certain age and below a certain age (such as the age of puberty in parts of sub-Saharan Africa and the legal age at marriage in some Western countries) are typically considered more attractive for marriage. The more desirable a particular age is considered for marriage, the higher the market-determined value of a woman's time in marriage if market forces operate. Young age is more likely to be an asset to a woman's value of time in a society like ours, where brides and grooms allocate themselves more according to the market mechanism than in a society where the allocation of individuals into marriages operates principally on the base of command mechanisms.

The effects of age on a woman's wage and reservation wage may differ. The wage rate is expected to increase with age, due to more experience in the labor market, up to an age of optimal earnings. The value of time in marriage, assuming free market forces prevail, is also expected to increase up to an optimal age, but this age is likely to be much earlier than the optimal age for earnings in the labor market. Past the optimal age for marriage, we expect age to be associated with an intensified tendency to participate in the labor force, as the effect of age on wage and reservation wage reinforce each other.[18] Again, we can use findings about labor force participation to (carefully!) infer

RULE OF INFERENCE #4. If the labor force participation of married women of culture A is found to increase less with age than is the case in culture B, we may infer that in culture A marriage institutions prevent women at a prime age

for marriage from capturing their higher value of time in marriage more so than in culture B.

Education. Education is a positive determinant of wages and is associated with higher satisfaction from work. This explains the generally greater participation of educated women in the labor force. The value of time in marriage and the reservation wage might be positively affected by education as well, to the extent that education raises the productivity of women's time in marriage in the eyes of a substantial number of men participating in a marriage market. In turn, this implies that more educated women will have a higher reservation wage and be less likely to supply labor in the labor force. To the extent that a more educated woman translates this resource into a higher degree of bargaining power in her marriage and then applies that bargaining power into better material living conditions, she will also have a higher reservation wage and be less likely to supply labor in the labor force.

Incorporating the effect of education on women's value in marriage therefore significantly weakens the commonly accepted hypothesis that more educated women are more likely to work in the labor force. Education may encourage women's labor supply at the highest levels of education, which are most likely to affect wage levels and satisfaction from work, and are not likely to have a positive impact on women's value of time in marriage and their reservation wages. However, at low levels of schooling, it is very possible that a year of schooling might add to a woman's value of time in marriage more than to her wage, which would imply that education would have a discouraging effect on labor supply.[19] Where marriage markets are relatively free to establish a woman's value of time in marriage, the value of education as a resource in marriage will be reflected in higher compensations received by women in marriage, and therefore higher reservation wages. Education is not as likely to translate into a higher reservation

wage where value of women's time in marriage is restricted by the equivalent of price controls or other coercive rules (unless coercion is less likely to occur in educated marriages). This leads to:

RULE OF INFERENCE #5. If the labor force participation of married women of culture A is found to increase more with education than is the case in culture B, we may infer that education contributes less to women's value of time in marriage in culture A than in culture B, possibly because marriage institutions of culture A prevent women at optimal educational levels from capturing the full value of their time in marriage.

In this paper our goal is to apply these rules of inference in order to derive some conclusions as to the effect of religion on married women's value of time in Israel. In Israel all three major monotheistic religions are represented and have relatively autonomous marriage institutions.

By keeping an inventory of the differences in religious institutions we can not reach an unambiguous prediction as to how women of various religious persuasions are treated in marriage. Points 1, 2 and 5 above lead us to predict that Moslem married women have a higher value of time than their Christian or Jewish counterparts: in terms of point 1, Moslems seem to encourage fertility the most and actually have the highest fertility of all three religious groups (see Table 1); in terms of point 2, the average age difference between husband and wife is higher among Moslems (expected to increase the value of time of young women); and in terms of point 5, Moslems have some degree of polygamy whereas the other religious groups have none in the age groups we are covering.

However, points 3, 4, 6, 7, and 8 lead us to predict that Moslem married women have a lower value of time than their Christian or Jewish counterparts: exogamy laws favor men more among Moslems (point 3); rules of divorce favor men more among

Moslems (point 4); domestic violence against women and forced marriages are more common among Moslems (points 6 and 7); and bridewealth payments are common among Moslems but not among Christians (point 8) or Jews. Given these contradictory influences, we do not have a clear prediction about the total effect of religion on value of time in marriage.

As mentioned above, when applying rules of inference 4 and 5, which deal with women's age and education, one has to be aware of alternative links between women's labor force participation, age and education. If there are religious differences in the effects of age and education on wages, it will be difficult to disentangle these from religious differences in the effects of age and education on value of time in marriage when interpreting effects of age and education on women's labor force participation. One study indicates no differences in the effect of education on women's wages across the three religious groups in Israel, which increases our confidence in rule of inference #5. [20]

3. Empirical Study

In this section we present our data, methodology, and findings.

Data. In order to examine the labor force pattern of Israeli married women we used the 20% sample of the Israeli 1983 Census of Population and Housing conducted by the Bureau of Statistics. This is the last and most recent census. Our sample covers some 147,173 Israeli married women - 89% Jewish, 9% Moslem and 2% Christian (Druze and others excluded, see Table 1). Each household member (15 years old or over) has been interviewed separately and personally and has answered a battery of some forty question relating to his or her socioeconomic background (age, sex, marital status, religion, place of birth and place of residence, marriage and children, education and working history).

Our sample covers 146,173 first-time married couples. The sample is divided into 130,082 Jewish couples, 13,103 Moslem and 2,988 Christian couples. This composition is quite similar to the religious composition of the Israeli population.

The population of Israel is composed of two major ethnic groups: Jews, who are the majority (3,412.5 thousand, 82.86% of the population in 1983) and Arabs. The latter are subdivided into Moslems (542.2 thousand, 13.6% of the population), Christians (95.9 thousand, 2.33%) and Druze and others (68.0 thousand, 1.65%).[21] Due to the small number of employed Druze women, this group is excluded from the following discussion.

Table 1 offers some additional information about our sample. It can be seen t hat the occupational distribution is different for the three groups of working women: the great majority of Moslems, 62.5%, are employed in technical jobs mainly as primary school teachers[22] (53.3% are primary school teachers, not in the table). About half of the Christian employees are also in technical occupations, 34.3% are primary school teachers. The Arabs have a separate educational system where most Arab female employees are employed. The largest percentage of Jewish women are employed in clerical jobs (32.5%). In technical jobs we find 27.9% of Jewish employed women. The second largest occupation for Moslem women is service - 16.1% of working Moslem females are in service jobs, mainly as nurses (13.1%). The percentages are a bit lower for Christians (12.1%) and Jews (14.9%). Women can also be found in clerical jobs and as workers in industry. In all other occupations the numbers of women from all religious groups are quite negligible.

Inspection of the distributions by economic sector reveals that the vast majority of all women is employed in the public sector: 54.4% of Jewish women, 63.5% of Christian and 80.9% of Moslem. The very high share for Moslems and Christians in the

public sector results from the fact that the education and health systems in Israel are public. This similarity in the nature of the major employer of all Israeli women, regardless of religion, implies that small religious differences in wage are expected. In the government all workers have similar work contracts, implying similar wages for similar levels of human capital.

Jewish women appear to have considerably more schooling and fewer children than Christian women, who in turn have more schooling and fewer children than Moslem women. Moslem women had an average of 4.6 years of schooling and 5.3 children [23], in contrast to 10.3 years of schooling and 2.8 children for Jewish women, and 8.7 years of schooling and 3.6 children for Christian women.[24] An estimation of wage equations reveals that the three religious groups of women had similar rates of return to education.

The very significant gaps in educational attainments and in fertility patterns of the three groups almost close when we focus on working women. The average number of years of schooling for Jewish, Christian and Moslem women are 12.18, 11.96 and 11.52 years, respectively, as compared to 10.22, 8.72 and 4.64 years for the entire female samples. The average number of children is also very similar for the three groups: 2.39, 2.27 and 2.94 children, respectively, compared to 2.81, 3.64 and 5.32 for the larger samples of all women. Years of schooling for the husbands are also very similar when we look at the households in which the wife is working, compared to all households in the sample. The similarity in educational attainments leads to more similarity in monthly income of husbands of working women, as contrasted to husbands of all women.

For the Jewish women we have a subdivision by ethnic origin: 59.6% of working women are of a Western origin, originating from Europe/America, while 40.4% are of an Eastern origin, from Asia/Africa. Eastern women have a lower tendency to join the

labor force and therefore their share in the labor force is smaller than the share in the population. About 50% are Israeli born or immigrated before statehood in 1948, about 35% immigrated after statehood and up to 1965, and the rest after 1965.

Methodology. To test whether the effects of husband's income, children, age, and schooling on labor force participation rates of women differ for the various religious groups, we estimate regressions of employment with a pooled sample of women of all religious origins. The method of estimation is logit, an appropriate method given the dichotomous nature of the dependent variable.

A regression of participation in the labor force was estimated including the following explanatory variables: age, age squared[25], schooling, number of children, husband's schooling, husband's income, and dummy variables for Christian and Jewish (Moslem being the reference group).[26] Husband's schooling was included either as an alternative measure of income (It has been used as a measure of permanent income in the past) or due to differences in the value of time in marriage of women married to husbands with higher education. Their value of time in marriage may differ for a number of reasons: educated men may be more supportive of their wife's career, women may appreciate educated husbands for other reasons, or educated men may have a different demand for women's work in marriage.

Each explanatory variable other than the religion dummies was entered three times, interacted each time with one of the three religions. We opted for this version of a full interaction model so that when we translated the logit coefficients into partial derivatives we could obtain effects of each continuous explanatory variable for each group based on the average probability of participation for each religious group. To transform the logit coefficients into partial derivatives we multiplied each coefficient with $p_i\ (1 - p_i)$, where p_i is the average probability that a woman of religious group *i*

participates in the labor force. The reported partial effects in Tables 2 and 3 refer to a woman with an average probability to participate. In Table 4 we report estimated probabilities of labor force participation for selected values of the explanatory variables.

Findings. As mentioned in the introduction, Moslem women are significantly less likely to participate in the labor force than Jewish and Christian women (see Table 1). While 46.9% of Jewish married women are employed, the rate drops to about half for Christian women (22.7%) and to less than one-tenth for Moslem women (4.5%). The differences in full-time employment are even larger: 23.9%, 11.2% and 1.6% for Jewish, Christian and Moslem women, respectively.[27]

Table 4 presents the estimated probabilities of labor force participation for women with average characteristics based on the logit participation equations estimated in Table 2. Average Jewish Israeli women had an estimated probability of LFP of 43.6%, the corresponding LFP rates being 15.3% for Christian women and 1.1% for Moslem women. It can be seen from Table 3 that when the various explanatory variables are controlled for, the participation rate of Jewish women in the labor force was 3.15 times that of Moslem women. Christian women's participation stood at 167% of that of Moslem women.

Rule of inference #1 stated that Moslem women may have a higher reservation wage and value of time in marriage than non-Moslem women. If that is the case, the institutions of marriage found among Moslem Israelis would have caused a higher value of time for Moslem married women than for their non-Moslem counterparts. Alternatively, there are additional restrictions on the participation of Moslem married women in the labor force, such as further distance from jobs (many Moslems live in villages offering limited job opportunities) or more restrictions on interactions with men other than a husband.

Tables 2 to 4 present the empirical findings on which we can apply rules of inference 2 to 5. Table 3 reports partial effects in percentage points for a woman with an average probability to participate (see notes to Table 2), while Table 4 presents estimated probabilities to participate for women with selected characteristics. Husband's income had been used in logarithmic form in the logit regression, so that the partial effects in Table 2 can be interpreted as (husband's) income elasticities of wife's participation in the labor force.

Discussion. A positive elasticity of .026 of wife's labor force participation (LFP) to husband's income was found in the case of Moslem women, and a negative elasticity of -.008 in the case of Jewish Israeli women (husband's income was not significant in the case of Christian women). [28] Following rule of inference #2, it appears that husband's income is associated with a higher reservation wage for Jewish Israeli women, while it is associated with a lower reservation wage for Moslem women. The case of Christian Israeli women is in-between. This suggests that marriage institutions in the Moslem Israeli culture prevent the value of women's time in marriage from reaching higher levels when husband's income is higher, more so than is the case with Jewish marriage institutions. Alternatively, the positive effect of husband's income on wife's labor force participation among Moslems could simply be due to lack of control for other variables correlated with husband's income. For instance, Moslem women whose husbands earn more could also live closer to a major city than Moslem women whose husbands earn less. Unfortunately, we do not have information on local labor markets in our data set, so we can not separate between these explanations.

The effect of husband's income on wife's LFP could be related to the effect of husband's schooling on wife's LFP. The reported regressions included both husband's income and husbands schooling. We found that husband's schooling only had a

significant and positive sign in the case of Jewish Israeli women, with no parallel findings for Moslem or Christian couples. As both husband's income and schooling are used, the coefficient of schooling may represent a net effect of education above its effect via income. The finding of a positive effect of husband's schooling which we report can be interpreted in at least two ways. First, more educated husbands may encourage their wives to enter the labor force. Second, Jewish Israeli men with more schooling, which is a resource, may use this asset as a bargaining tool allowing them to lower their wife's value of time in marriage. Jewish women may pay more for the benefit of having an educated husband than non-Jewish women. [29]

When income is excluded, husband's schooling has a significant positive effect on the LFP of Jewish women, while it has no effect on the LFP of Christian and Moslem women. When husband's schooling is excluded from the regressions husband's income has an insignificant effect on Jewish women's LFP, probably a result of the opposite effects of schooling and income canceling each other; husband's income continues to have an insignificant effect on Christian wives' LFP and it continues to have a significant *positive* effect on Moslem women's LFP.

Our finding of a positive husband's income effect for Moslem women thus does not depend on inclusions of husband's schooling in the regression. This does not imply that the classical theory of a leisure/income trade-off needs to be discarded. It possibly implies that Moslem marital institutions may prevent married women from benefiting much from their husband's higher income, whereas this is apparently not the case with Christian or Jewish marital institutions. It also implies that women's labor supply should be analyzed with a theory which integrates classical theory with a theory of marriage.

We also find that number of children has a negative impact on the participation of Moslem, Jewish and Christian Israeli women in the labor force. From Table 4 we see that differences in the estimated probabilities of LFP of Israeli women of different religions continue to be large at every level of fertility. However, we find that the discouraging effect of children on married women's LFP is stronger for non-Moslems than for Moslems. Each additional child discouraged mother's participation in the labor force: by 1.84% for Moslems, by 7.16% for Christians, and by 5.63% for Jews. Based on rule of inference #3, this suggests that Moslem Israeli marriage institutions may prevent the value of time of mothers of more children from reaching higher levels more so than non-Moslem marriage institutions.

In principle, the different effect of presence of children on labor force participation of Moslem and non-Moslem women could be due to differences in opportunities to combine income-generating work and childcare, a function of type of work and type of mother-substitutes available. This does not seem to be the case here. There are fewer childcare services in the Arab villages (mainly day-care centers), but Arabs tend to live in the same neighborhood as their parents, sisters and brothers, and they help each other with household work and childcare. The Arab women in our sample also work in types of work which facilitate combining work with motherhood - most of them work part time (this is particularly true for Moslem women of childbearing ages, see Table 1) and many of them are primary school teachers.

A non-linear relationship with age was found for all three groups. We find that beyond a certain age, age is positively related to labor supply of women for all religious groups, which possibly indicates that there is a positive effect of age on wage and a negative effect of age on reservation wage or both. Age has a stronger effect on the labor supply of Jewish Israeli women than on that of Moslem women. Each year added

to a woman's age increased her chances of participating in the labor force, less so for Moslem women than for Jewish women (2.29% vs. 6.77%). The effect of age is non-linear. At older ages, an additional year has a smaller positive effect on participation, a mitigating effect which is also stronger for Jewish women than for Moslem women. The effect of age on Christian women's LFP was not significantly different from that effect for women of other religions.

Based on rule of inference #4 we infer that Moslem Israeli women may be less likely to benefit from the value of youth in marriage than is the case with their Jewish counterparts. Alternatively, there could be more generational differences in desire to work among Moslem women than Jewish women. Younger Moslem women may have lost some of the traditional attitudes that kept their older counterparts from entering the labor force than is the case among Jews.

Finally, we found that education had a very strong and positive effect on the LFP of Israeli married women of all religions. This is especially obvious from Table 4, where it can be seen that differences across the religious groups disappear at the level of a college education. For all education levels, however, our tests indicate that the effect of education on married women's LFP is less of a positive effect for Moslem women than for Jewish or Christian Israeli women. According to Table 3 a year of schooling adds 2.37% to the probability that a Moslem woman participates in the labor force, while it adds more than double to the likelihood that a Christian or Jewish woman participates in the labor force (respectively 4.85% and 4.16%). Based on rule of inference # 5, we infer that in Israel, Moslem women can benefit more from the contribution of education to value of time in marriage than is the case for Christian or Jewish women. In turn, this may indicate diminishing productivity of schooling in marriage, or a weaker impact of traditional religious institutions when level of education increases (related to the process

of individual selection into educational and religiosity categories with each society).[30] Alternatively, the finding of a weaker effect of education on Moslem women's labor force participation could be due to more opportunities for educated non-Moslem Israeli women in the labor market or more labor market discrimination against educated Moslem women.

Each of the findings we have reported has alternative ad-hoc explanations. What we see, however, is that all findings reinforce each other. Moslem Israeli culture seems to be more like culture A in our rules of inference, and non-Moslem Israeli cultures more like culture B. The finding about religious differences in the effect of education on labor supply does not contradict our other. It could be that the institutions which make Moslem culture an A-type culture do not apply as much to educated people.

Clues on Traditional Moslem Culture. One of our most striking findings is that the labor force participation of Christian Israeli Arab women resembles that of Jewish Israeli women more so than that of Moslem Arab Israeli women. Initially, we found this surprising, given that Christian women's participation appears to be closer to the Moslem women's participation rate than to the Jewish women's participation rate. Our findings help us interpret the statistics reported in Table 1 for working women only, where Christian women appear more similar to Jewish women than to Moslem women. The contrast between Moslem women on the one hand and both Christian and Jewish women on the other hand makes sense in terms of our analysis of marriage institutions and labor supply.

Our findings suggest that Moslem Israeli women are less able to translate resources in marriage into a higher value of time than is the case with Jewish and sometimes Christian women. This applied to the following resources: whatever led a woman to marry a man with a higher income, youth, or children. However, education is a resource

which appears to be associated with more variation in reservation wage among Moslem Israeli women than among their non-Moslem counterparts.

Our findings are consistent with the existence of substantial differences between the marital institutions of Moslem Israeli culture on the one hand and Christian and Jewish Israeli culture on the other hand. If Islamic laws and customs regarding marriage and divorce are significantly different from Christian and Jewish laws and customs, and the latter two religions are similar to each other, it is only natural that we find the labor supply of Christian and Jewish women responding similarly to differences in socio-economic variables.

Our inferences indicate that Moslem marital institutions may interfere more with women's opportunities to benefit from their market value in marriage than parallel Jewish and Christian marital institutions. The Moslem institutions in question may include divorce laws giving automatic custody to fathers, exogamy rules favoring men, and light punishment against men killing female relatives.

This analysis also makes sense of the apparently different result regarding educated Moslem vs. non-Moslem women. Education is mostly Western education, and educated Moslem women may be a self-selected group marrying compatible men. These couples may not accept Moslem traditions as fully as their less educated counterparts, enabling educated Moslem women to receive closer to their market value of time in marriage. This explains why Moslem traditionalists argue that female education weakens the Islamic family unit. [31]

Another implication of our analysis is that labor market factors such as discrimination against the Arab minority explain few of the differences in women's labor supply. If discrimination by Jews against Arabs played an important role, we would expect to find similar results for all Arab women, Moslem or Christian. Discriminatory

Jewish Israeli policies--such as prohibition of army service--tend to discriminate against all Arabs and do not make distinctions between Moslem and Christian Arabs. However, if marriage factors explain the religious differences in determinants of women's labor supply, then it makes sense that more similarities were found between Jewish and Christian women than between Christian and Moslem women.

4. Conclusions

In this paper we compared patterns of married women's labor supply across religious groups in Israel. We used findings on differential impacts of husband's income, number of children, education, and age on labor supply in order to infer how marriage institutions affect women's value of time in marriage. Given the limited methods available to assess value of time outside the labor market, this is a valuable contribution.

Women belonging to religious groups with different marriage institutions appear to behave differently in the same national labor force. More specifically, the effects of husband's income, number of children, and age on Moslem women's labor supply were weaker than for Jewish women. The effects of wife's schooling and husband's income on Moslem women's labor supply were also significantly different from these effects for Christian women. Only the effect of children on Christian married women's labor supply differed significantly from that effect for Jewish women. We relate these findings to the contrast between laws and customs regulating marriage and divorce among Moslem Israelis and the equivalent laws and customs found among Christians and Jews in Israel. Christian Arab Israeli marriage institutions regulating marriage and divorce appear to resemble more the institutions regulating marriage and divorce among Israeli Jews than the institutions regulating marriage and divorce among Moslem Arab Israelis. Moslem women appear to be less likely to translate their resources into a higher

value of time in marriage than either Christian women or Jewish women. However, this conclusion does not appear to hold for educated women.

Our economic analysis of religious institutions, marriage, and labor supply strengthens interpretations of religious institutions as products of political and historical factors. Both in the (Christian) West and the Moslem East there is a tendency to think about religion in Black and White and to categorize Moslem religious institutions as rigid obstacles to modernity. [32] We found that educated Moslem Arab Israeli women seem to have achieved some success at using their education towards the achievement of higher values of time in marriage relatively to their non-Moslem counterparts. This possibly indicates that religious institutions related to marriage are not rigid, but instead respond to changes in what people want from marriage as they become more educated.

The command mechanisms of marriage in traditional societies are being challenged universally, including within Moslem societies. Educated women in other economically developed Moslem societies have started to challenge Islamic rulings influencing marriage and detrimental to women. For instance, in 1995 Malaysia, one of the most developed Moslem economies, passed a national law against domestic violence. Local Islamic feminists are now putting pressure on Moslem clerics to induce them to follow this law. [33]

This study opens new avenues for related empirical research. It would be appropriate to apply the theoretical inferences and empirical methodology presented here to comparisons between other groups, whether they are classified by religion, ethnicity, or class and whether they are located in Israel or in any other country such as the United States. It is possible that our results showed significant religious differences due to the clear differences in lifestyle between various religious groups in Israel, who live in separate institutional settings. Israel has few national laws governing marriage

and divorce for all citizens. Other comparisons will indicate whether the results we show are valid elsewhere. For instance, it will be interesting to compare Israeli Jews from the West and from Arab countries, or blacks and whites in the United States.

Finally, this analysis makes a strong case for integration between marriage theory and labor supply theory. We can learn more about labor supply by analyzing marriage, and more about marriage by analyzing labor supply. Marriage institutions influence labor behavior. Our findings indicate that it is not simply husband's income which influences wife's labor supply, but rather the amount of husband's income reaching the wife which influences her labor supply. Marriage institutions apparently govern the degree to which husbands and wives share their income. This is one of the many ways by which marriage influences labor supply.

Notes

* An earlier version of this paper was presented at the annual meetings of the Population Association of America, San Francisco, April 1995. We gratefully acknowledge helpful comments of the editor, an anonymous referee, and Robert Taylor, the econometric advice of Danny Steinberg, and the financial help of the Schnitzer Foundation for Research on the Israeli Economy and Society.

1. Becker, Gary S., "A Theory of Allocation of Time," Economic Journal 75 (1965): 493-515. Mincer, Jacob, "Labor Force Participation of Married Women: a Study of Labor Supply," In Aspects of Labor Economics, edited by H. Gregg Lewis (Princeton, N.J.: Princeton University Press, 1962). Gronau, Reuben, "The Interfamily Allocation of Time: The Value of the Housewives' Time," American Economic Review, 63 (1973).

2. e.g. Barry Chiswick, "Labor Supply and Investment in Child Quality: A Study of Jewish and Non-Jewish Women," Contemporary Jewry 9 (1988):35-61; and Evelyn L. Lehrer, "The Effects of Religion on the Labor Supply of Married Women," Social Science Research 24 (1995): 281-301.

3. See Chiswick, op. cit., Lehrer, Evelyn L. "The Impact of Children on Married Women's Labor Supply--Black-White Differentials Revisited." Journal of Human Resources 27 (1992):422-444. Shoshana Grossbard-Shechtman, "An Integrated Analysis of Labor and Marriage and Explanation of Black/White diffrences in Marriage, Labor, and Welfare Participation," Paper presented at the Conference on Economics and Sociology in Honor of Gary Becker and James Coleman, San Diego, 1995.

4. Becker, Gary S., "A Theory of Marriage: Part I," Journal of Political Economy, 81 (July/August 1973):813-846. Becker, Gary S., "A Theory of Marriage:

Part II," Journal of Political Economy, 82 (March/April 1974):511-26. Becker, Gary S., A Treatise on the Family, (Cambridge, Mass.: Harvard University Press 1981).

5. Exceptions include Amyra Grossbard-Shechtman, "A Theory of Allocation of Time in Markets for Labour and Marriage," Economic Journal, 94 (1984), Elizabeth H. Peters, "Marriage and Divorce: Informational Constraints and Private Contracting," American Economic Review, 76 (1986): 437-54, Grossbard-Shechtman, Shoshana A., On the Economics of Marriage (Boulder, CO.: Westview Press, 1993), and Jeffrey S. Gray, "Divorce Law Changes, Household Bargaining, and Married Women's Labor Supply," Paper Presented at the Population Association of America, Cincinatti, April 1993.

6. See Grossbard-Shechtman 1984, 1993 especially Chapter 2, for a more detailed analysis of how marriage markets influence reservation wage, and how marital institutions influence marriage markets. In Grossbard-Shechtman (1993) marriage markets are defined as markets for spousal labor. For an empirical study of how characteristics valued in the marriage market are related to the wife's labor supply, see Amyra Grossbard-Shechtman and Shoshana Neuman, "Women's Labor Supply and Marital Choice," Journal of Political Economy, 96 (December 1988): 1294-1302.

7. See Hale, Sondra, "Gender and Economics; Islam and Polygamy - A Question of Causality." Feminist Economics, 1 (Summer 1995):67-80.

8. A large age difference could also be endogeneous in the sense that it is another result of relatively high demand for wives by husbands.

9. In Judaism divorce costs are also higher for women than for men, for men find it easier to circumvent their wife's unwillingness to consent to a divorce than is the case for women who face a husband not consenting to divorce. However, in contrast to Islamic courts, Jewish religious courts tend to allocate custody to mothers more often

than to fathers. Therefore, the prospective costs of divorce to Moslem mothers is higher than to Jewish mothers.

10. The impact of costs of divorce and remarriage faced by the spouses on value of time in marriage has been analyzed in Grossbard-Shechtman 1993 and in Shoshana Grossbard-Shechtman, "Marriage Market Models," Peters 1986, The New Economics of Human Behavior, ed M. Tommasi and K. Ierulli (Cambridge: Cambridge University Press, 1995). It can also be analyzed in light of the economic literature on bargaining in marriage. See Marilyn Manser and M. Brown, "Marriage and Household Decision Making: a Bargaining Analysis," International Economic Review 21 (1980):31-44, and Marjorie B. McElroy and M.J. Horney, "Nash Bargained Household Decisions: Toward a Generalization of the Theory of Demand," International Economic Review 22 (1981):333-49. All these economic theories of marriage were influenced by Becker's theory of marriage (see Becker 1973, 1974).

11. See Becker (1973), Amyra Grossbard, "Towards a Marriage Between Economics and Anthropology and a General Theory of Marriage," American Economic Review 68 (May 1978):33-37, and Grossbard-Shechtman (1993). Our Moslem sample consists of families with one wife only, but the fact that, according to Islam, it is possible for men to marry more women is expected to lead to a higher reservation wage for Moslem women.

12. If it is indeed the case that women in polygamous cultures are worse off than they are in monogamous cultures, it could be because of these other differences. The low status of women in polygamous societies does not prove that the demand/supply analysis of polygamy is wrong, as claimed in Barbara Bergmann, "Becker's Theory of the Family: Presposterous Conclusions," Feminist Economics 1 (1995): 141-50. Other institutions may be designed to specifically prevent women from enjoying a higher

market value, as suggested by Marcia Guttentag and Paul F. Secord, Too Many Women: The Sex Ratio Question (Beverly Hills: Sage Publications, 1983).

13. This follows reasoning first developed by Becker (1981). See also Grossbard-Shechtman (1993), Ch. 4.

14. Similarly, Gronau (1973) provided estimates of value of time at home based on labor behavior. However, marriage markets and institutions did not appear in his analysis.

15. One expects married women's value of time to vary with husband's income for at least two reasons: (1) positive sorting between desirable qualities of men and women in the marriage markets, and (2) men with more income wanting more to be produced in marriage, an argument also found in most recent analyses of labor supply.

16. More children may indicate more resources on the part of either the husband or the wife, and therefore be associated with a higher value of the wife's time. However, the divorce costs of a woman with more children are higher than the divorce costs of a woman with fewer children, especially if divorce laws are adverse to women's interests. The presence of children may create more of an asymmetry in the costs of divorce, as argued in Becker 1981 and Carmel U. Chiswick and Evelyn L. Lehrer, "On Marriage-Specific Human Capital--Its Role as a Determinant of Remarriage." Journal of Population Economics 3(1990):193-213.

17. One also expects that mothers of young children will have a higher value of time than mothers of older children. In the U.S. the depressing effect of children on women's labor supply was found to be stronger for Jewish mothers of children in pre-school and in school, in a comparison with women from other religions (see Chiswick 1988).

18. One has to be careful not to mix age effects with cohort effects. Some cohorts face dimmer prospects in either the labor market or the marriage market or both (see Grossbard-Shechtman 1993). In turn, low values of value of time in marriage faced by a cohort such as the first baby-boomers imply low reservation wages and high rates of female labor force participation (see Grossbard-Shechtman, Shoshana and Clive Granger, "Women's Jobs and Marriage--Baby-Boom versus Baby-Bust". Working Paper, University of California, San Diego, February 1996).

19. Evidence for positive effects of low levels of schooling on women's value of time in marriage has been provided using the likelihood of marriage versus cohabitation and the presence of other wives as indicators. See Grossbard-Shechtman 1993 (Chapters 3 and 6, 9, and 11).

20. See Shoshana Neuman, "Gender Versus Ethnic Wage Differentials and Discrimination - Methodological Considerations and Evidence from Israel," Department of Economics, Bar-Ilan University, mimeo, 1996.

21. Valid for the end of 1983, when the Census of Population and Housing, on which our empirical analysis is based, was conducted. The sample distribution by religion is quite similar to that of the population. We refer only to Israeli Arabs and not to those living in the occupied territories.

22. For the historical reasons for the entry of women into the teaching profession see Miriam M. Mar'i and Sami Kh. Mar'i, "The Role of Women as Change Agents in Arab Society in Israel," Women's Worlds, ed. Marilyn Safir, Martha T. Mednick, Dafne Israeli and Jessie Bernard. (New York: Praeger Publishers, 1985).

23. These numbers are inferred from our sample. Number of children born includes those that died. The sample employed does not include data on age of children.

24. Comparing the average number of years of schooling, based on the 1961 and 1983 censuses, reveals a dramatic rise for Moslem women - 4.64 years of schooling in 1983 (Table 1) as compared to 0.5 years in 1961 (more than ten times as large!). For Christian and Jewish women the changes are smaller in percentage terms. For Christians: 8.72 in 1983 compared to 4.6 in 1961 and for Jews: 10.33 and 7.3, respectively. Checking fertility rates for the three religions, in 1960 and 1983, we have rates of 9.31 dropping to 5.32 for Moslems, 4.61 and 3.64 for Christians, and 3.49 in 1960 and 2.81 in 1983 for Jews.

25. The square of age is included to test for a possibly non-linear effect of age on labor force participation.

26. We did not include estimated wage in our regressions. Wages are usually estimated as a function of age and schooling. This would have complicated our interpretations of religious differences in the effect of education and age on labor force participation.

27. These are, in fact, employment rates rather than labor force participation rates as they do not include unemployed women. We will use the two terms "labor force participation rates" and "employment rates" indifferently. However we always mean "employment rates".

28. The difference between the effect of income on Moslem women's labor force participation and that effect for either Jewish or Christian women is statistically significant.

29. The average years of schooling is much lower for Moslem women. The average for Christian women is almost double that for Moslem women, and less than two years less than the average for Jewish women (see Table 1). The point about

selection of combinations of educational and religious levels was contributed by Robert Taylor.

30. See discussion on compensating differentials in marriage in Grossbard-Shechtman 1993 (Chapters 4,7,8, and 9).

31. See Theresa El-Mahairy, "Status and Education of Women: A Perspective on Egypt," Women's Worlds, eds. Marilyn Safir, Martha T. Mednick, Dafne Israeli and Jessie Bernard (New York: Praeger Publishers,1985). Even social planners with a modern perspective concerning women's education are wary of copying the Western experience. In W. Hassouna, "Education of Women-For What?" The Cairo Papers in Social Science-Women's Health and Development (Cairo: The American University in Cairo Press, Vol. 1, Monograph 1, 1977), Hassouna, a physician and development planner in the Ministry of Health in Egypt, states that more educated women who tend to join the labor market are double losers: they suffer a decrease in their status in domestic roles and are assigned the menial, crypto-servant jobs. He relates to Egyptian women, but such views may be prevalent amongst Israeli traditional Arabs as well. Such views are shared by some observant orthodox Jews as well, but as they compose a small fraction of our sample (there is no possibility to identify them in the sample as there is no question relating to religiosity) the average results for Jewish women are only marginally affected by this group.

32. Mohammed Arkoun, Rethinking Islam (Boulder Co: Westview Press, 1995).

33. Seth Mydans, "Blame Men, Not Allah, Islamic Feminists Say," New York Times (October 10, 1996): A4.

TABLE 1

Means and Standard Deviations (in parentheses), by Religion

Married Israeli Women: Israeli Census, 1983

Variables	Jewish Women	Christian Women	Moslem Women	Jewish Women	Christian Women	Mos Wor
	All Women			Working Women		
Years of schooling	10.33 (4.35)	8.72 (4.25)	4.64 (4.48)	12.18 (3.81)	11.96 (3.48)	11 (4.
Age	42.93 (14.62)	39.67 (12.81)	35.18 (12.30)	37.40 (10.60)	36.05 (9.90)	3((7.
Number of children	2.81 (2.01)	3.64 (2.61)	5.32 (3.62)	2.39 (1.58)	2.27 (1.68)	2 (2.
Employed	46.9%	22.7%	4.5%	*	*	
Worked full time	23.9%	11.2%	1.6%	49.7%	47.1%	36
Years of schooling of husband	10.85 (4.41)	9.36 (4.49)	6.67 (4.52)	12.29 (4.06)	12.07 (4.40)	11 (4.
Monthly income of husband (shekel)	29,752 (38,400)	20,304 (22,382)	15,729 (15,826)	35,210 (40,808)	26,026 (20,959)	24, (27, 6
Immigrated before 1947	9.2%	*	*	4.5%	*	
Immigrated 1948-1964	41.8%	*	*	34.4%	*	
Immigrated 1965-1971	5.8%	*	*	5.0%	*	
Immigrated after 1971	9.2%	*	*	11.1%	*	
Western origin	55.6%	*	*	59.6%	*	
Eastern origin	44.4%	*	*	40.4%	*	
Economic sector						
Agriculture and fishing	*	*	*	1.0%	0.5%	1
Industry	*	*	*	13.8%	14.5%	

Electricity and water	*	*	*	0.5%	0.6%	
Construction	*	*	*	1.1%	0.8%	
Commerce, restaurants and hotels	*	*	*	9.2%	9.8%	
Transport, storage and communication	*	*	*	2.8%	1.8%	
Financing and business services	*	*	*	12.9%	5.3%	
Public and community services	*	*	*	54.4%	63.5%	8
Personal and other services	*	*	*	4.3%	3.1%	
Occupation						
Scientific and academic workers	*	*	*	9.2.%	5.8%	
Other professional, technical and related workers	*	*	*	27.9%	48.7%	6
Administrators and managers	*	*	*	2.4%	0.2%	
Clerical and related workers	*	*	*	32.5%	16.5%	
Sales workers	*	*	*	4.5%	3.2%	
Service workers	*	*	*	14.9%	12.1%	1
Agricultural workers	*	*	*	0.5%	0.2%	
Skilled workers	*	*	*	6.5%	10.4%	
Unskilled workers	*	*	*	1.6%	3.1%	

Sample size	130,082	2,988	13,103	52,264	620	5
Relative frequency of religious group	89.0%	2.0%	9.0%	97.7%	1.2%	1.

Notes:

* not relevant or no observations

TABLE 2

Logit Regression of a Labor Force Participation Equation

Married Israeli Women: Israeli Census, 1983

Dependent Variables	Parameter Estimate	Standard Error	Partial Effect
Intercept	-18.6766	1.2199	
Jewish	12.6201	1.2278	
Jewish* Schooling	0.1670	0.0031	0.0416
Jewish* Age	0.2714	0.0055	0.0677
Jewish* Age Squared	-0.00335	0.00007	-0.0008
Jewish* Number of Children	-0.2258	0.0067	-0.0563
Jewish* Husband's Schooling	0.0204	0.0027	0.0057
Jewish* Husband's Income (ln)	-0.0315	0.0124	-0.0078
Moslem* Schooling	0.4324	0.0203	0.0237
Moslem* Age	0.4165	0.0495	0.0229
Moslem* Age Squared	-0.0041	0.0007	-0.0002
Moslem* Number of Children	-0.3348	0.0367	-0.0184
Moslem* Husband's Schooling	0.0051	0.0157	0.0003
Moslem* Husband's Income (ln)	0.4774	0.1001	0.0263
Christian	8.6454	1.7005	
Christian* Schooling	0.2519	0.0256	0.0485
Christian* Age	0.3023	0.0438	0.0583

Christian* Age Squared	-0.0036	0.0006	-0.0007
Christian* Number of Children	-0.3718	0.0435	-0.0716
Christian* Husband's Schooling	0.0199	0.0187	0.0038
Christian* Husband's Income (ln)	0.1375	0.0988	0.0265

Notes to Table 2

1. Sample used for the regression is composed of 80,045 Jewish women, 8,873 Moslem women and 1,931 Christian women.

2. The reference group is "Moslem".

3. The partial effects have been calculated, using the approximation rule $b_i P(1 - P)$.

b_i is the regression coefficient, and P is the average probability to participate in the labor force. P is calculated for each group *separately* using a labor force participation equation for that group. For each woman in the group her individual P has been estimated and then the average for the whole group was calculated. This resulted in the following average probabilities:

P (Jews) = 0.5259, P (Moslems) = 0.0582 and P (Christians) = 0.2605.

To calculate the partial effects of variables that refer to Jewish workers, P (Jews) was used and similarly the other two Ps were used for the Moslem variables and for the Christian variables, respectively. The choice of independent variables in the above logit equation has been made in order to facilitate such an estimation procedure.

TABLE 3

Partial Effects on Labor Force Participation (in Percentage Points)

by Religion, Married Israeli Women: Israeli Census, 1983

Estimated at the Points of Average Probabilities

Variables	Jewish Women	Christian Women	Moslem Women
Schooling	4.16[a)]	4.85[a)]	2.37
Age	6.77[a)]	5.83	2.29
Age squared	-0.08	-0.07	-0.02
Number of children	-5.63[a)b)]	-7.16	-1.84
Husband's schooling	0.57	-	-
Husband's Income (ln)[c)]	-0.0078[a)]	-	0.026[b)]

Notes:

Based on partial effects reported in Table 2. All reported partial effects are significant at $\alpha = 0.05$ 0

- : refers to an insignificant effect.

a) Effect on labor force participation significantly different than corresponding effect for Moslem women.

b) Effect on labor force participation significantly different than corresponding effect for Christian women.

c) Husband's income is transformed into ln and therefore the respective partial effects measure income elasticities.

TABLE 4

Estimated Probabilities of Labor Force Participation (in Percentage Points) for Selected Values of the Explanatory Variables

	Jewish Women	Christian Women	Moslem Women
Reference case: Woman with average characteristics	43.56	15.27	1.13
Selected cases: **Woman's schooling**			
4 years	20.95	5.18	0.84
8 years	34.08	13.01	4.58
12 years	50.21	29.06	21.31
16 years	66.29	52.87	60.43
Woman's age			
Average age - 2SDs	18.32	3.66	0.015
Average age -1SD	63.79	18.52	0.65
Average age +1SD	41.66	16.05	2.37
Average age +2SDs	21.57	18.65	5.41
Number of children			
0 children	58.41	38.15	4.34
Average number - 1SD	52.84	29.84	2.27
Average number +1SD	31.23	6.22	0.22
Average number +2SDs	22.42	2.13	0.058
Husband's schooling			
Average schooling - 2SDs	39.65	13.01	1.09
Average	41.62	14.06	1.11
	45.03	16.36	1.16
	47.66		

schooling - 1SD		17.63	1.18
Average schooling +1SD			
Average schooling +2SDs			
Husband's income (ln)	44.64	13.61	0.63
Average income - 2SDs	44.25	14.43	0.80
Average income - 1SD	43.09	16.22	1.29
Average income +1SD	42.71	17.17	1.63
Average income +2SDs			

Notes to Table 4

1. The estimated probabilities are calculated using the regression of Table 2.
2. The reference case is a woman with average characteristics, reported in Table 1.
3. The partial effects reported in Table 2 and Table 3 are at the points of average probabilities (see note of Table 2). Here we refer to the probabilities of women with average characteristics. As our model is not linear the two sets of probabilities are obviously different.
4. The various selected cases differ from the reference woman in only one characteristic, as indicated in the Table.
5. SD stands for Standard Deviation.