GENDER-BASED WAGE DIFFERENCES, HOUSEHOLD BARGAINING AND WORKING WOMEN'S WELFARE: THEORY AND EVIDENCE FROM IZMIR, TURKEY

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Abstract

This paper looks at household welfare distribution among two-income couples from three social strata in Izmir, Turkey. A simple explicit two-stage dynamic game theory model is developed to determine if an egalitarian intra-household distribution under certain circumstances is consistent even though women earn lower wages than men. The data was derived from a questionnaire developed to determine the viewpoints of each spouse regarding the personal expenditures of the other. The model, although a noncooperative household bargaining model, also has aspects of cooperative models and proved to be flexible enough to be applicable for different socio-economic strata

Introduction

Macro level statistics on gender in the Middle East and North Africa (MENA) show large gender gaps in literacy, employment and earnings. In addition, micro level economic studies on the level of the household are scarce for the region. In general, economists have long insisted on considering the household as a homogeneous and harmonious decision-making unit where the female and the male partner have equal power. Yet distribution of welfare inside the household is a legitimate concern and is not easy to study. Data is crucial to understanding welfare distribution within the household. The quest for data prompted us to create a questionnaire in which both parties had to confirm whether what the other party considered as personal expenditures was indeed what he/she also considered as such. We conducted the survey in Izmir, Turkey which has a diverse income distribution (and consequently a wide variety of norms) as well as a significant stigma associated with divorce for women in at least one segment of the society. We interviewed households in three social segments and built our theory on the observed empirical facts of the two-income Turkish households. Our results indicate that the intra-household division (or spending) of the surplus income, is in most cases, more or less egalitarian in the absence of complete and perfectly enforceable marital contracts in the traditional households. The empirical results of the survey (Cinar and Anbarci, 2000) show that the majority of working women in the upper and middle strata households have intra-household power (by proxies measuring spending and time), even though they earn less than men. At first glance, this finding seems contradictory. However, casual observations of MENA households have shown consistently over time that women have a great deal of influence within the household, either due to separate spheres or through household bargaining.

In the first part of this study, we discuss the literature survey and summarize the empirical findings of the Izmir household survey. In the second part of the paper, we provide a simple explicit model to show that an egalitarian intra-household distribution under certain circumstances is consistent with the fact that women earn lower wages than men. We first model the case in which the husband earns more than the wife. We then make adjustments for when the wife earns more or when the public good (love, affection, childcare, etc.) she provides in the marriage, is varied. Our model is a simple two-stage dynamic model with infinite-horizon payoffs. Although it is a non-cooperative household bargaining model, it also has certain aspects of cooperative models.

Empirical Evidence

There have been many studies on Turkish working women. In her study on power within Turkish households, Timur (1972, p. 103) related the structure of the family (nuclear versus extended) to power. It was found that both men and women reported that men ruled the households regardless of structure. On the other hand, Kagitcibasi (1984, p.133) indexed a woman's work and her status in the household (type of job versus low, middle and high within-family-status) and found that large proportions of Turkish professional women had middle or high status within the household. Kuyas (1982) analyzed the concept of power ("male control") within patriarchal relations in two Turkish socio-economic classes (middle versus lower) framework. Esim (1996) did an economic study on gender variables and earnings of women entrepreneurs where 80 percent of her survey data included two income couples. She found that five gender-based factors (marital status, ratio of time on non-market work over market work, childcare arrangements, location of business, and working in the traditional sectors), were significant in determining women's income. Moreover, women earned less than men even in the same subsectors. She also reported that women entrepreneurs spent 21.7 hours per week on average on housework and childcare (non-market work) and worked 82.2 hours per week, while men entrepreneurs spent 2.2 hours on non-market work.

To get an idea of income shares and spending distribution on self and children within the household and to measure proxies for power[1] and happiness, a survey was conducted in the city of Izmir, Turkey. Izmir is the third largest city, with a population of 2.1 million residents, including a large group of immigrants in the informal sector[2].

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[1] Power in this study is defined as having control over one's resources.

[2] Piar-Ege Incorporated has done extensive field surveys in and around the city of Izmir, Turkey. Their population and social strata breakdown in urban/rural areas were adapted for this field work. The social strata groups of Piar-Gallup can loosely be called upper, middle and lower socio-economic strata (20 percent, 60 percent and 20 percent of the population in three large urban cities [Ankara, Istanbul, Izmir] in Turkey or 10 percent, 50 percent and 40 percent in all of Turkey, respectively). Upper socioeconomic stratum was made up of the top and middle managerial class and professionals. Educational backgrounds were university or graduate education with the exception of a few self-made entrepreneurs. Middle stratum was defined as white collar and skilled blue-collar workers (high school or community college education). The last group was the informal economy as well as unskilled workers. While divorce and remarriage is becoming common in the upper professional groups, there is still the stigma of divorce in the middle and lower socio-economic groups in our sample.

Since the focus in this study is in household bargaining within each broad category, equal samples were drawn from the three aggregate groups. One hundred fifty surveys were conducted in Izmir during June of 1996 using stratified random sampling of the population and of different city districts. Out of the fifty

Based on the field survey conducted in Izmir, a separate study (Cinar 2000) developed four proxies of power for working women in three different socio-economic strata in the Turkish household. All power relations were defined relative to the spouse and were measured with respect to income, personal spending and personal leisure time. The four relative power variables (three monetary and one non-monetary) were used as proxies of working women's welfare in the household. The first proxy used was earning power (i.e. relative earnings between husband and wife). The second and the third proxies were based on spending (i.e. relative absolute personal spending and relative proportional personal spending than the income shares) The fourth proxy was the relative personal leisure hours.

In the sample, about 25 percent of the women earned as much or more than their husbands. Earnings were influenced by the socio-economic class and by the level of education of the woman. About 59 percent of the working women spent more on themselves than their husbands did. Similarly, 70 percent of women spent at least as much proportionally (compared to their income share) than their spouses. In both these proportions, the age of the male was an important positive factor and in the latter proxy, socio-economic class also mattered.

Personal leisure time relative to the husband was used as a non-monetary proxy of power. Out of those families who reported at least positive leisure time for one spouse, leisure was a scarce good for women and this was heavily influenced by the socio-economic strata. In the informal type work (low socio-economic class), almost all women reported zero or near zero leisure hours, implying a strong compensation of lack of human capital by hours of paid and non-paid work effort. Our findings correlate with Kagitcibasi (1984), who found a high correlation between intra-family status and socio-economic strata for Turkish working women. We also do not negate the Phipps and Burton's (1992) U.S. study, which suggests a woman's power is related to her contribution to the household income. Our results also reinforce the Hersch and Stratton (1997a, 1997b) study of U.S. working women and heavy housework hours. However, we also find a strong socio-economic component to the power proxy of leisure time, where the lower the socio-economic strata, the less are the leisure hours of Turkish working women.

Our proxies of power within the household show variations between each socio-economic group, with women in the lower group having the least power, at least

with respect to control over time. The bargaining model that we build in the next section is flexible enough to account for these differences among the women in different socio-economic strata. One should again reemphasize that while divorce holds no stigma for the women in the upper group, it is an effective threat point for those in the middle and lower strata.

The Household Bargaining Model with Divorce as a Threat Point

Lundberg and Pollak (1993) use noncooperative bargaining with Nash threat points in a one-period model of public good provision that generates inefficiently low levels of provision. Lundberg and Pollak's model assumes that "socially recognized and sanctioned gender roles assign primary responsibility for certain activities to husbands and certain others to wives". Furthermore, "in the case of marriage, social conventions regarding the rights and responsibilities of husbands and wives may indeed suggest to the spouses a particular equilibrium." (JEP:151).

Initially, we model the case in which the husband has more income and yet the wife may be more powerful with respect to personal spending. In our model, the male makes the offers which the female can accept or reject. England and Kilbourne (1990) argue that women's upbringing is such that they are less willing than men to drive hard bargains with their spouses; thus impeding their bargaining effectiveness. As a result, there are first-mover advantages. When men make the marriage proposals, men are better off than in the situation in which women make the marriage proposals. Also, males initiating marriage offers prevail in traditional societies such as the one from which our data is derived.

In our model the parties are risk-neutral. Kachelmeier (1991) reports that more than half of the 234 subjects who took part in his experiment exhibit linear utilities. There is a discount factor of B < 1.

We assume that both parties know all parameter values right from the outset. At period t=1, the first stage is the prenuptial stage. At that stage, the male first decides whether or not to propose marriage. If he does not, then the parties receive their autarky payoffs forever. If the male proposes marriage, then the female can either accept or reject it. If she rejects it, then the parties receive their autarky payoffs forever. Otherwise, the postnuptial stage, which is a proper subgame, is reached. In the postnuptial subgame, first the husband decides whether to make an egalitarian offer (equal sharing) or a proportional (proportional-to-income shares) offer. Whichever offer he decides to make, it has to be accepted by the wife concerning all periods t>1. Otherwise, a divorce follows but the division of the surplus at t=1 complies with the offer made by the husband.

We assume that the female works at a regular job at each period t (greater than or equal to 1) that pays a normalized wage of 0. The husband in the marriage contributes a normalized amount of 0 to the public good within the marriage. The wife contributes to the public good by P* which enables the husband to earn a wage gap of W* (as opposed to the wage W less than or equal to W* that he would earn without P*)[3]. W* is the gender earnings gap in the household. P* is enjoyed by both parties; i.e., it is a pure public good as long as the marriage lasts[4].

If divorce occurs, then at period 2 each party incurs a divorce cost. These costs entail court costs as well as large psychic costs due to divorce. The wife, being the party that provided P* to enable W* initially and because of her low potential wage, may also be entitled to a portion A (where A is between zero and one) of the man's after-divorce wage W each period t>1 following the divorce. The wife after divorce will enjoy her contribution to the previously public (and now private) good solely.

We have ruled out remarriage for the model since remarriage is not an equilibrium outcome because of the divorce costs[5].

The autarkic value function are:

$V_F(\text{autarky}) = P^*/(1-B)$

$V_M(\text{autarky}) = W^*/(1-B)$

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[3] If the parties are divorced, since there is a marital wage premium for the husband, he might seek professional help in household tasks to protect that wage premium and that would effectively make his after divorce wage W less than W*.

[4] An egalitarian division of the surplus income here means 1/2W* for each party. A proportional distribution, on the other hand, means 0 for the wife and W* for the husband since we normalize the wife's wage to zero and discuss the gender wage gap.

[5] Our model can be interpreted as one in which there is an implicit stage in which the male and his family evaluate all possible female partners, and then the most optimal matches are made. Although, allowing the possibility that divorced people can enter the remarriage market would be more realistic, incorporating it meaningfully into our model would need more than making the above assumption. The stylized fact of the remarriage market is that divorced men are three times more likely to remarry than are divorced women. There may be various possibilities to drive this result that divorced people enter the remarriage market, and men are much more likely enter that market than women. One can introduce the fact that the divorced female would lose her alimony if she remarried and/or if the divorced female gets custody of the children (which may reduce her attractiveness in the remarriage market). Another stylized fact is that the divorced male with kids enters the remarriage market more than a male without children. Moreover, there is serial polygamy for wealthier men (for whom divorce costs and paying alimony may be less significant, and for whom the younger pretty women provide a higher P* than the older ones) or actual polygamy in some MENA countries. Another interesting fact that needs to be incorporated in such an extension, is that the number of marriageable men may be significantly smaller than that of marriageable women due to worker migration in MENA. However, these are subjects for a separate paper.

The postnuptial value functions are:

$V_F(\text{egalitarian},Y)=1/2W^*+ P^*+B(1/2W^*+P^*)/(1-B)=(1/2W^*+P^*)/(1-B)$

$V_F(\text{egalitarian},N)=1/2W^*+P^*+B(P^*+AW)/(1-B)-BC_F$

$V_F(\text{proportional},Y)=P^*+BP^*/(1-B)=P^*/(1-B)$

$V_F(\text{proportional},N)=P^*+BP^*/(1-B)+BAW/(1-B)-BC_F=P^*/(1-B)+BAW/(1-B)-BC_F$

$V_M(\text{egalitarian},Y)=1/2W^*+P^*+B/1/2W^*+P^*)/(1-B)=(1/2W^* + P^*)/(1-B)$

$V_M(\text{egalitarian},N)=1/2W^*+P^*+B(1-A)W/(1-B)-BC_M$

$V_M(\text{proportional},Y)=W^*+P^*+B(W^*+P^*)/(1-B)=(W^*+P^*)/(1-B)$

$V_M(\text{proportional},N)=W^*+P^*+B(1-A)W/(1-B)-BC_M$

We define AW as alimony and Cs as divorce costs to each party. Before we analyze the postnuptial subgame, we would like to show that a separate move by the husband at which he decides whether to ask for divorce is not needed. Proofs of all propositions can be requested from authors.

Proposition 0
(i) If the wife accepts the proportional offer, the husband never wants a divorce; (ii) suppose that the wife does not accept the proportional offer. Also if $(1/2W^*+P^*)/(1-B)+C_M < (1-A)W/(1-B)$, the husband prefers a divorce to a marriage with an egalitarian division, he will then make the proportional offer so that the wife rejects it, which is equivalent for him to a proposal of divorce.

Part (i) states that if the husband can get the proportional division in the marriage, he will prefer it to a divorce. Part (ii) states that, given that the wife does not accept the proportional offer, if the present value of the husband's after-divorce net wage is high, he would prefer a divorce to making the egalitarian offer to the wife (which she would accept). In that case, he can practically force her to ask for a divorce by making the proportional offer which she will reject. For that reason we do not have a separate move in the postnuptial game at which he decides whether or not to ask for a divorce. The counterpart of Proposition 0 is valid in any model in this paper.

The analysis of the postnuptial subgame: Propositions 1-3 pertain to the postnuptial subgame (i.e., assuming that the parties are already married). Proposition 1.4 will then analyze whether the forward-looking parties, knowing what will happen in the postnuptial subgame, will unanimously agree to get married or not.

Proposition 1.1
(i) if $AW/(1-B) < C_F$, then accepting any offer is the dominant strategy for the wife; (ii) If $AW/(1-B) > C_F$ and $1/2W^*/(1-B)+C_F > AW/(1-B)$, then the wife rejects the

proportional offer but accepts the egalitarian offer; (iii) if $AW/(1-B)-C_F >1//2W^*/(1-B)$, then rejecting any offer is the dominant strategy for the wife; (iv) $V_F(\text{egalitarian}, N) > V_F(\text{proportional}, N)$, and $V_F(\text{egalitarian}, Y) > V_F(\text{proportional}, Y)$ regardless of the parameter values; also, $V_M(\text{proportional}, N) > V_M(\text{egalitarian}, N)$, and $V_M(\text{proportional}, Y) > V_M(\text{egalitarian}, Y)$ regardless of the parameter values; (v) the total welfare in (egalitarian, Y) and (proportional, Y) are the same. The total welfare in (egalitarian, N) and (proportional,N) are the same. The total welfare in any marriage is greater than in the break-up of the marriage.

Part (i) states that if the cost of divorce exceeds the present value of the alimony, even if the alternative of divorce is the proportional division, the wife will accept it. This fits in with the stylized facts of most MENA households, where the costs of a divorce are very high for women. Part (ii) states that for the wife it is less attractive to reject the egalitarian offer than it is to reject the proportional offer. Thus, there are some parameter values under which she rejects the proportional offer, but accepts the egalitarian offer. Part (iii) states that if the alimony is too generous compared to the divorce cost and the egalitarian division payoff in the marriage, then the wife will prefer divorce to any type of marriage. That is, divorce can be the dominant strategy for her. Part (iv) states that between the divorce types, the wife (husband) always prefers the one that follows the egalitarian (proportional) offer. Also, between the marriage types, she (he) prefers the one with the egalitarian (proportional) division. It also implies that making the egalitarian offer can never be the dominant strategy for the husband, but making the proportional offer can be the dominant strategy for him under some circumstances. Part (v) states that the total surplus is greater with marriage than without it. However, there is no welfare difference between marriage types. Likewise, there is no welfare difference between divorce types.

Proposition 1.2

(I) if $(W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B)$, then $V_M(\text{proportional}, Y) > V_M(\text{proportional}, N)$; (ii) if $(1-A)W/(1-B) > (1/2W^*+P^*)/(1-B)+C_M$, then $V_M(\text{egalitarian}, N) > V_M(\text{egalitarian}, Y)$; (iii) if $(W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B) > (1/2W^*+P^*)/(1-B)+C_M$, then making the proportional offer is the dominant strategy for the husband; (iv) if $(W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B) > (1/2W^*+P^*)/(1-B)+C_M$ and $AW/(1-B) < C_F$, then (proportional,Y) is the equilibrium outcome; (v) If $(W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B) > (1/2W^*+P^*)/(1-B)+C_M$, and $AW/(1-B) > C_F$, then (proportional,N) is the equilibrium outcome.

Part (i) states that when the present value of the after-divorce net wage is not very high, the husband, at least, prefers the marriage with the proportional division to divorce that ensues the proportional offer, rather than the divorce that ensues the egalitarian offer. Part (ii) states that if the present value of the after-divorce net wage is high, the husband may prefer any divorce to the marriage with the egalitarian division ("any divorce" follows from Part (iv) of Proposition 1.1 which established that $V_M(\text{proportional}, N) > V_M(\text{egalitarian}, N)$). Part (iii) states that when the present value of the husband's after-divorce net wage is not very high or not very low, making the proportional offer is better than making the egalitarian offer, regardless of whether the wife accepts or rejects that offer. Part (iv) states that when the husband's present value of the after-divorce net wage is not very high or not very low, and the present value of the alimony is lower than the divorce cost for the wife, he will make the proportional offer which she will accept. The intuition is as follows. When the present value of the husband's after-divorce net wage is not very high, he prefers the marriage with the proportional division to a divorce ensuing the proportional offer. Otherwise, he would prefer a divorce regardless. When the present value of the husband's after-divorce net wage is not very low, he prefers a divorce to a marriage with the egalitarian division. Part (v) states that when the present value of the husband's after-divorce net wage is not very high or not very low, and the present value of the alimony is higher than the divorce cost for the wife, he will make the proportional offer which she will reject.

Proposition 1.3

(i) if $(1/2W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B)$, then $V_M(\text{egalitarian}, Y) > V_M(\text{egalitarian}, N)$ and $V_M(\text{proportional}, Y) > V_M(\text{proportional}, N)$; (ii) if $(1/2W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B)$, and $AW/(1-B) < C_F$, then (proportional,Y) is the equilibrium outcome; (iii) if $(1/2W^*+P^*)/(1-B)+C_M > (1-A)W/(1-B)$, as well as $AW/(1-B) > C_F$ and $1/2W^*+C_F(1-B) > AW$, then (egalitarian,Y) is the equilibrium outcome; (iv) if $AW/(1-B)-C_F > 1/2W^*/(1-B)$, then (proportional,N) is the equilibrium outcome; (v) (egalitarian,N) is never an equilibrium outcome.

Part (i) states that when the present value of the husband's after-divorce net wage is low, then he prefers the continuation of the marriage to its break-up, regardless of the offer he will make. Part (ii) states that in the case described in Part (i), if the present value of the alimony is lower than the divorce cost for the wife, he will make the proportional offer which she will accept. Part (iii) states that when the husband's after-divorce net wage is low, and the present value of the alimony is higher than the divorce cost for the wife (but not too generous), then he will make the egalitarian offer which she will accept. Part (iv) states that if the present value of the alimony is too generous, then, knowing that she will reject any offer, he will make the proportional offer. Part (v) follows from Part (iv), when the wife has an incentive to

reject even the husband's egalitarian offer, then for the husband it is better to be rejected ensuing the proportional offer and thus, he will make the proportional offer which the wife will reject.

Analysis of the prenuptial stage

For the postnuptial bargaining subgame to be reached, the male has to choose to propose marriage and subsequently the female has to accept it. Given the backward induction equilibrium outcomes (i.e., the dynamic programming outcomes) of the postnuptial subgame, we will determine when the female would accept the male's proposal; given that, we will then determine the circumstances under which the male would propose marriage. Recall that for modeling purposes, the parties never face any uncertainty concerning the future values of the parameters.

Proposition 1.4

(i) For the female, accepting the male's marriage proposal is the best response; (ii) if the equilibrium outcome of the postnuptial subgame is (proportional, Y), for the male the best response is to propose marriage; (iii) suppose that the equilibrium outcome of the postnuptial subgame is (egalitarian, Y). If also $1/2W^* + P^* > W$ holds, then for the male the best response is to propose marriage. Otherwise, he will not propose marriage; (iv) suppose that the equilibrium outcome of the postnuptial subgame is (proportional, N). If also $(W^*+P^*) > W(1-B(1-A))/(1-B)+BC_M$, then for the male it is a best response to propose marriage. Otherwise, he will not propose marriage.

Part (i) states that the female weakly prefers accepting a marriage proposal. This again is a realistic option for many women in the MENA region. For those in the lower socio-economic classes especially, marriage is better than no marriage. Part (ii) states that if the equilibrium outcome of the postnuptial subgame is (proportional,Y), then the male will definitely propose marriage. Parts (iii) and (iv) state the parameters under which the male would propose marriage if the equilibrium outcomes of the postnuptial subgame are (egalitarian,Y) and (proportional,N), respectively.

Given the welfare implications of marriage, the best policy suggestion seems to set $C_F < AW/(1-B) < 1/2W^*/(1-B)+C_F$ (i.e., to adopt an alimony level which is not very low or very high to encourage staying married).

Digression: The Case where the Female Earns More than the Male

For both the low-income families, and the high-income families who responded to our questionnaire, the probability of the wife earning more than the husband, was small, but not insignificant. The egalitarian outcome under those circumstances has a different reason from the one we obtained in Part (iii) of Proposition 1.3. In the situation where $W_F > W^*$; we do not include an alimony because the wife is not the party that will be worse off following a divorce[6].

The relevant value functions are:

$V_F(autarky)=(W_F+P^*)/(1-B)$

$V_M(autarky)=W/(1-B)$

$V_F(egalitarian, Y)=1/2(W^*+W_F)+P^*+B[1/2(W^*+W_F)+P^*]/(1-B)=[1/2(W^*+W_F)+P^*]/(1-B)$

$V_F(egalitarian, N)=1/2(W^*+W_F)+P^*+B(P^*+W_F)/(1-B)-BC_F$

$V_F(proportional, Y)=W_F+P^*+B(W_F+P^*)/(1-B)=(W_F+P^*)/(1-B)$

$V_F(proportional, N)=W_F+P^*+B(W_F+P^*)/(1-B)-BC_F=(W_F+P^*)/(1-B)-BC_F$

Note that $V_F(proportional, Y)$ is also equal to the female's autarky payoff if she never gets married. Thus, in this case, the presence of pre-arranged marriages or of factors that do not pertain to the economic viability of the marriage, may explain why these females would ever get married, especially if the parameters are such that for the future husband offering an egalitarian division is the dominant strategy.

$V_M(egalitarian,Y)=1/2(W^*+W_F)+P^*+B[1/2(W^*+W_F) + P^*]/(1-B)=[1/2(W^*+W_F)+P^*]/(1-B)$

$V_M(egalitarian,N)=1/2(W^*+W_F)+P^*+BW/(1-B)-BC_M$

$V_M(proportional,Y)=W^*+P^*+B(W^*+P^*)/(1-B) = (W^*+P^*)/(1-B)$

$V_M(proportional,N)=W^*+P^*+BW/(1-B)-BCM$

Proposition 2.1 analyzes the postnuptial subgame.

Proposition 2.1

(i) $V_F(proportional,Y) > V_F(egalitarian,Y)$ and $V_F(proportional,Y) > V_F(proportional,N) > V_F(egalitarian,N)$; also, $V_M(egalitarian,Y) > V_M(proportional,Y) > V_F(proportional,N)$ and $V_M(egalitarian,Y) > V_M(egalitarian,N) > V_M(proportional,N)$; (ii) if $1/2(W_F+W^*) > B(W^*-W+P^*)/(1-B)+BC_M$, then $V_M(egalitarian,N) > V_M(proportional,Y)$. In that case, making the egalitarian offer is

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[6] When we have the knife-edge case, $W_F = W^*$, the two types of offers have identical outcomes and thus any marriage is preferred to any divorce by both parties because $V_F(egalitarian,Y) = V_F(proportional, Y) = V_M(egalitarian, Y) = V_M(proportional, Y) = k$; then $k > V_F(egalitarian, N) = V_F(proportional, N)$ as well as $k=V_F(egalitarian, N) = V_F(proportional, N)$.

the dominant strategy for the husband. (iii) If $C_F > 1/2(W_F-W^*)/(1-B)$, then $V_F(egalitarian,Y) > V_F(egalitarian,N)$; (iv) if $1/2(W_F+W^*) > B(W^*-W+P^*)/(1-B)+BC_M$, and $C_F > 1/2(W_F-W^*)/(1-B)$, then (egalitarian,Y) is the equilibrium outcome; (v) If $1/2(W_F+W^*) < B(W^*-W+P^*)/(1-B)+BC_M$, and $C_F < (W_F-W^*)/(1-B)$, then (proportional,Y) is the equilibrium outcome; (vi) If $1/2(W_F+W^*) > B(W^*-W+P^*)/(1-B)+BC_M$, and $CF < 1/2(W_F-W^*)/(1-B)$, then (egalitarian, N) is the equilibrium outcome; (vii) (proportional, N) is never an equilibrium outcome.

Part (i) states that the wife prefers $V_F(proportional, Y)$ to any other outcome, and the husband prefers $V_M(egalitarian, Y)$ to any other outcome. Part (ii) states that if the wife's wage is high, then the husband may prefer "staying in an egalitarian marriage even for one period" to a life-long marriage in which the wife will get the lion's share. Part (iii) states that if the wife's divorce cost is hefty, then the wife will prefer staying in an egalitarian marriage to having a divorce after spending one-period in an egalitarian marriage. Part (iv) states that if the wife's wage and divorce cost are both high, then (egalitarian, Y) will be the equilibrium outcome. Part (v) states that if the wife's wage and divorce cost are both not so large, then (proportional, Y) is the equilibrium outcome. Part (vi) states that if the wife's wage is high but her divorce cost is not so large, then (egalitarian, N) is the equilibrium outcome. Part (vii) follows from the fact that when the parameter values are such that the husband prefers making the proportional offer, the wife always accepts it, since it is her most favorite outcome.

But in many developing countries including the MENA region, especially at lower income levels, most marriages are either arranged or marriage decisions do not pertain to economic prospects in the future since many couples get married at very early ages. Thus, in such marriages the prenuptial stage is irrelevant and can be omitted in our analysis. But that stage is still relevant in the case of the marriages within the high-income socio-economic classes.

Proposition 2.2
(i) Suppose that the equilibrium outcome of the postnuptial subgame is (egalitarian, Y) or (egalitarian, N), then the female rejects the male's marriage proposal. She accepts it if the equilibrium outcome of the postnuptial subgame is (proportional, Y); (ii) for the male, proposing marriage is the best response.

The Model where the Public Good Varies (the Case of P* and P)
We go back to the initial assumption where $W_F = 0$ and we examine the value of the gender wage gap. One can alter our original model using a more realistic feature such as the wife's contribution to the public good (P^*), if and only if, she is happily married (feeling or hoping that she is an equal in the marriage). Otherwise, her contribution goes down to $P < P^*$. The latter has an intuitive advantage (apart from having the flavor of Lundberg and Pollak's separate spheres model). With the proportional offer by the husband, the wife may not feel an equal partner in the marriage any more and may loose her joy associated with providing the public good. With only the marginal cost of contributing to the public good present, she may be able to provide only $P<P^*$.

Case 2: (a) P^* prevails at t=1 if and only the parties are married, and (b) at t>1 if and only if the egalitarian offer has been made and accepted before. Otherwise, $P < P^*$ prevails at any period.

The value functions are as follows:

$V_F(autarky)=P/(1-B)$

$V_M(autarky)=W/(1-B)$

$V_F(egalitarian,Y)=1/2W^*+P^*+B(1/2W^*+P^*)/(1-B)=(1/2W^*+P^*)/(1-B)$

$V_F(egalitarian,N)=1/2W^*+P^*+B(P+AW)/(1-B)-BC_F$

$V_F(proportional,Y)=P^*+BP/(1-B)$

$V_F(proportional,N)=P^*+B(P+AW)/(1-B)-BC_F$

$V_M(egalitarian,Y)=1/2W^*+P^*+B(1/2W^*+P^*)/(1-B)=(1/2W^*+P^*)/(1-B)$

$V_M(egalitarian,N)=1/2W^*+P^*+B(1-A)W/(1-B)-BC_M$

$V_M(proportional,Y)=W^*+P^*+B(W^*+P)/(1-B)=W^*/(1-B)+P^*+BP/(1-B)$

$V_M(proportional,N)=W^*+P^*+B(1-A)W/(1-B)-BC_M$

Propositions 3.1-3.4 are the counterparts of Propositions 1.1-1.4 and 3.4 is identical to 1.4.

Proposition 3.1
(i) If $AW/(1-B)<C_F$, then accepting any offer is the dominant strategy for the wife; (ii) if $AW (1-B)>C_F$ and $1/2W^* > AW$ (or $(P^*-P)/(1-B)+C_F > (AW-1/2W^*)/(1-B)$ in case $1/2W^*< AW$), then the wife rejects the proportional offer but accepts the egalitarian offer; (iii) if $AW/(1-B)-C_F > [1/2W^*+(P^*-P)]/(1-B)$, then the wife rejects any offer; (iv) $VF(egalitarian,N) > V_F (proportional,N)$, and $V_F(egalitarian,Y) > V_F(proportional,Y)$ regardless of the parameter values; also, $V_M(proportional,N) > V_M(egalitarian,N)$ regardless of the parameter values. $V_M(proportional,Y) >$

V_M(egalitarian,Y) if $1/2W^* > (P^*\text{-}P)$, V_M(egalitarian,Y) greater than or equal to V_M(proportional,Y) otherwise; (v) the total welfare in (egalitarian,Y) is greater than the one in (proportional,Y). The total welfare in (egalitarian,N) and (proportional,N) are the same. The total welfare in any marriage is greater than in the break-up of any marriage.

Proposition 3.2

(i) If $(W^*\text{+}P)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B)$, then V_M(proportional,Y) $>$ V_M(proportional,N); (ii) if $(1\text{-}A)W/(1\text{-}B) > (1/2W^*\text{+}P^*)/(1\text{-}B)\text{+}C_M$, then V_M(egalitarian,N) $> V_M$(egalitarian,Y); (iii) $(W^*\text{+}P)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B) > (1/2W^*\text{+}P^*)/(1\text{-}B)\text{+}C_M$, then making the proportional offer is the dominant strategy for the husband; (iv) if $1/2W^* > B(P^*\text{-}P)$ and $AW/(1\text{-}B) < C_F$, then (proportional,Y) is the equilibrium outcome; (v) if $(W^*\text{+}P)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B) > (1/2W^*\text{+}P^*)/(1\text{-}B)\text{+}C_M$ and $AW/(1\text{-}B) > C_F$, then (proportional,N) is the equilibrium outcome.

Proposition 3.3

(i) If $(1/2W^*\text{+}P^*)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B)$, then V_M(egalitarian,Y) $>$ V_M(egalitarian,N). If also $1/2W^* > P^*\text{-}P$, then V_M(proportional,Y) $>$ V_M(proportional,N) too holds; (ii) if $(W^*\text{+}P)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B)$, as well as $1/2W^* > B(P^*\text{-}P)$ and $AW/(1\text{-}B) < C_F$, then (proportional,Y) is the equilibrium outcome; (iii) if $(1/2W^*\text{+}P^*)/(1\text{-}B)\text{+}C_M > (1\text{-}A)W/(1\text{-}B)$ as well as $1/2W^* < B(P^*\text{-}P)$ and $AW/(1\text{-}B) > C_F$, then (egalitarian,Y) is the equilibrium outcome; (iv) if $AW/(1\text{-}B)\text{-}C_F > [1/2W^*\text{+}(P^*\text{-}P)]/(1\text{-}B)$, then (proportional,N) is the equilibrium outcome; (v) (Egalitarian,N) is never an equilibrium outcome.

Corollary 3.1

Unlike the initial model with a fixed P^*, in Case 2, when the husband prefers making the egalitarian offer and the wife prefers a divorce to accepting the proportional offer, the wife never has any incentives to reject the egalitarian offer.

With the presence of P along with P^*, given the parameter values under which the husband has incentives to make the egalitarian offer, the present value of the alimony will never be too generous to induce her to reject even the egalitarian offer. Its proof simply follows from Part (iii) of Proposition 3.3 (and thus it is omitted). The analysis of the prenuptial stage is the same as the one in the initial model with a fixed P^*. Thus, all results in Proposition 1.4 still hold here.

One can further distinguish between the public good levels in (proportional, Y) and divorce situations. But this will only complicate the model without altering the results significantly.

Conclusion: The Compatibility of the Egalitarian Division of the Surplus Income with Gender-Based Wealth Differences

We developed a household bargaining model, which is flexible enough to be applicable for each of the different economic strata to which women belong. In our game, the symmetric efficient outcome, in which the surplus is divided equally can become an equilibrium outcome given certain parameters in the absence of complete and perfectly enforceable marital contracts in the traditional household. The value of payoffs and the gender earning gap differ between and among socio-economic classes to give different equilibrium solutions for each household. Egalitarian division of the surplus income is now consistent with fact that women have much less wealth than do men. As Lundberg and Pollak (1993) put it: "Like any microanalysis that appeals to focal points or social norms, our analysis inevitably raises macro questions-how do the social norms and gender roles that constrain a particular marriage arise and how are they maintained-and directs our attention to these larger issues." "[T]he real action is … in the prior game that determines social norms and gender roles." (P.152)

Given that sometimes the egalitarian division and sometimes the proportional division may prevail within the marriage, the parents of the female, being altruistic towards her, may consider providing her with more education so that she can have a payoff equal to that of the husband, and/or a better fall back payoff in case of divorce. Such additional education, by providing a higher wage, may increase the opportunity cost of providing the public good, and thus decrease the number of children and/or postpone the timing of having children.

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