How Bargaining in Marriage Drives Marriage Market Equilibrium

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I. Introduction

II. BIM: Theory and Evidence

III. Marriage Market Equilibrium with BIM

- To minimize notational clutter, I assume

$$u_{io} = u_{oj} = 0 \text{ for all } i, j$$

- I assume that the marriage market contains equal numbers of men and women (n) and denote the $n \times n$ utility surplus matrix, S, by

$$\mathbf{S} = \begin{bmatrix} u_{11} & \cdots & u_{1n} \\ \vdots & & \vdots \\ u_{n1} & \cdots & u_{nn} \end{bmatrix}.$$

- If man i marries women j, I denote the expected division of utilities between them by $(\tilde{u}_{ij}^{h}, \tilde{u}_{ij}^{w})$ and the $n \times n$ utility division matrix, D, by

$$\mathbf{D} = \begin{bmatrix} (\tilde{u}_{11}^{h}, \tilde{u}_{11}^{w}) & \cdots & (\tilde{u}_{1n}^{h}, \tilde{u}_{1n}^{w}) \\ \vdots & & \vdots \\ (\tilde{u}_{n1}^{h}, \tilde{u}_{n1}^{w}) & \cdots & (\tilde{u}_{nn}^{h}, \tilde{u}_{nn}^{w}) \end{bmatrix}.$$

To facilitate comparisons between BIM and BAMM, I assume that utility divisions are Pareto efficient so that

$$\tilde{u}_{ij}^{h} + \tilde{u}_{ij}^{w} = u_{ij},$$

although the BIM analysis of marriage market equilibrium does not require Pareto efficiency.[18] The marriage market implications of BIM follow from the division matrix and the assumption that the utilities of unmarried men and unmarried women are zero.[19] I do not assume

$$\tilde{u}_{ij}^{h} \geq 0 \quad \text{or} \quad \tilde{u}_{ij}^{w} \geq 0.$$

Gale and Shapley proposed an intuitively appealing equilibrium concept for matching models, a "stable matching."[20] They define a stable matching as an assignment of women to men (or, equivalently, of men to women) that satisfies two properties:

1. No married individual prefers being unmarried to his or her current assignment.
2. No two individuals of opposite sexes prefer being married to each other to their current assignments.

This definition covers both the case in which the current assignment is being unmarried and the case in which it is being married to a particular individual. Gale and Shapley proved that if each individual's ranking is an ordering, as it must be under our assumption that rankings are based on the utilities individuals expect to emerge from BIM, then a stable matching exists. I denote a stable matching corresponding to BIM by the mapping $\tilde{F}(i) = j$ from the set of men, $\{1, \dots, n\}$, into the set $\{0, 1, \dots, n\}$. If $\tilde{F}(i) = j$, $j \neq 0$, then man i marries woman j; if $\tilde{F}(i) = 0$, then man i remains unmarried. I denote the number of marriages by $\tilde{i}$.

IV. Marriage Market Equilibrium with BAMM

V. Implications of BIM and BAMM for Who Marries Whom and the Number of Marriages

A special case of the altruist model provides a transparent example in which BIM and BAMM lead to different marriage market assignments. Suppose that each man, if he had the power to allocate resources within marriage, would divide the utility surplus in the same proportion as every other man. Formally, this implies that the elements of the BIM utility division matrix are of the form

$$\tilde{u}_{ij}^{h} = \sigma u_{ij} \quad \text{for all } i, j$$

and

$$\tilde{u}_{ij}^{w} = (1 - \sigma) u_{ij} \quad \text{for all } i, j.$$

With this same-fraction specification, BIM and BAMM lead to different marriage market equilibria unless the BAMM equilibrium happens to be one that includes the marriage that corresponds to the greatest utility:

$$\tilde{F}(i) \neq \hat{F}(i) \quad \text{for some } i \ (i = 1, \dots, n).$$

Becker (1991, 111) showed that BAMM maximizes the sum of utilities over all possible marriages but that it does not necessarily choose the marriage that corresponds to the greatest utility.

I next construct a class of cases in which BIM and BAMM imply identical marriage market assignments by formalizing the intuition that if the BIM utility divisions and the BAMM imputations are identical, then BIM and BAMM imply the same marriage market assignments:

$$\tilde{F}(i) = \hat{F}(i) \quad \text{for all } i \ \ (i = 1, \dots, n).$$

$$\mathbf{S} = \begin{bmatrix} 12 & 4 \\ 4 & -2 \end{bmatrix}.$$

With BAMM, there is one marriage: man 1 marries woman 1. With BIM, the number of marriages depends on the utilities that individuals foresee emerging from bargaining. Suppose the utility division matrix is

$$\mathbf{D} = \begin{bmatrix} (11, 1) & (2, 2) \\ (2, 2) & (-1, -1) \end{bmatrix}.$$

Then with BIM, man 1 marries woman 2 and man 2 marries woman 1. Hence, with this division matrix, BIM leads to more marriages than BAMM.

VI. Enforcement: Costless Divorce, Prenuptial Agreements, and Premarital Transfers

VII. Conclusion Before concluding, cohabitation deserves further