

Research on the Chinese Marriage Crisis

- A Matching Perspective

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Abstract: This article examines the significant influence of parental attitudes on the mating choices of young adults in China. It highlights the stark dominance of Chinese parents in decision-making processes about their children's romantic lives, which can significantly influence the nation's marriage and divorce trends. Past articles revealed changes in parental attitudes towards their children's romantic relationships during university years, highlighting a shift from traditional opposition to increased support, potentially impacting financial assistance. Another stream of research focused on the ongoing marriage crisis in China, where declining marriage rates and rising divorce rates are influenced by socioeconomic changes, urbanization, and evolving marital values. They suggest that economic and cultural shifts play significant roles. This paper integrates sociocultural dynamics with a model of deferred acceptance in matchmaking to explore how shifts toward more progressive parental attitudes could be exacerbating the marriage crisis in China. By applying a matching algorithm, the study reveals that mismatches in parental expectations across different societal segments could lead to higher divorce rates and lower marriage rates. The paper proposes educational reforms and matchmaking optimizations as potential solutions to mitigate these effects.

Keywords: Matching theory, Chinese marriage crisis, dynamic matching, Defer-Acceptance algorithm

1. Introduction

In contemporary developed countries, dating and marriage behaviours are largely determined by individuals themselves, with decisions about entering or quitting relationships based on mutual affection and personal interests [1]. While parents may influence their children's decisions to some extent, their role is often limited and not typically decisive, resembling more the influence of a close friend than an authoritative figure [1]. In stark contrast, Chinese parents often play a dominant and decisive role in their children's romantic lives [2]. This influence can be so significant that may dominant any other factors. Chinese parents may intervene not only in extreme cases, such as when their child is about to marry a criminal, but also on trivial matters, such as rejecting a potential candidate over an unusual accent [2]. While this level of parental control may vary by region and family, it is generally strong and pervasive across the country [2]. Ignoring this significant parental influence in studies on Chinese youth's romantic choices could lead to erroneous conclusions. This

article, therefore, seeks to address this oversight by focusing on parental constraints as a starting point to explore the broader marital issues currently faced in China.

Several studies indicate that Chinese parents are increasingly open-minded about their children engaging in romantic relationships during university [3]. Concurrently, extensive research has focused on the ongoing marriage crisis in China without linking this shift in ideology to the crisis [4]. This paper aims to connect these dots by integrating dynamic progress into a typical matching scenario, suggesting that this progressive social ideology shift may contribute to the severe marriage crisis.

The discussion initiates with a review of prior research on these two topics, followed by the construction of two models, and finally concludes with a discussion on how to alleviate the current marriage crisis.

2. Literature review

Traditionally, universities have been viewed solely as places for study, leading parents to oppose their children having romantic relationships during their university years [3]. Liu noted that these attitudes were influenced by traditional cultural beliefs, creating a wide gap between parents' and children's perspectives [3]. However, research in 2019 found that parents have become more supportive [2]. Mo demonstrated that parents are likely to provide more financial support if their children are in a relationship [5]. Overall, past research suggests that parents' attitudes towards their children having relationships at the university stage have become more positive.

Regarding the marriage crisis, some research showed that the number of marriages registered each year is falling, while the divorce rate is rising, especially in the northeast provinces [5]. Mo's research also indicated a similar trend of increasing divorce rates alongside marriage rates [5]. Other research suggests that this trend is least significant on the east coast and more pronounced in the central and southern parts of the country [3]. Past research revealed a persistent and widespread trend of decreasing marriage rates and increasing divorce rates in China.

The marriage crisis is a severe problem from a social welfare perspective [5]. Therefore, considerable numbers of research have attempted to deconstruct the cause of the marriage crisis. A range of factors have been identified, including rapid social and economic changes driven by the state [6], shifts in marital ideas and delayed first marriages [7], and the role of economic stress, especially during job losses and high inflation [3]. Zhang further explored the impact of urbanization and unemployment rates, finding that the latter significantly negatively influences the divorce rate [8].

Previous research primarily attributed the marriage crisis to economic factors and young people's shifting ideas about marriage. Nonetheless, given China's cultural background, parents' preferences likely play an essential role in their children's decisions, especially concerning marriage [9]. This article will construct a matching scenario, then slightly adjust the typical assumption to demonstrate that more open-minded parents can worsen the matching outcome, causing low marriage rates and high divorce rates.

3. Model

The model is set as follows: A set of men and women will be matched using the man-proposed Deferred Acceptance algorithm, assuming all potential partners are acceptable. This result serves as a baseline. The set of men and women will then be split into two groups, each containing half the individuals, and the Deferred Acceptance algorithm will be applied to each group. The outcomes after splitting will be compared with the baseline result. This procedure will be repeated on another set of men and women, but the assumption that all potential partners are acceptable will be relaxed. In the end, the results of both models will be summarized.

The Deferred Acceptance algorithm is used because it is one of the most widely used methods, and the matching result derived from it is well-regarded [10]. In this algorithm, each man proposes to his favourite partner, and each woman tentatively accepts the most preferred proposal and rejects the others [10]. Unmatched men will propose to the most preferable women remaining, and women will consider all the offers in this round compared with the proposals they tentatively accepted in the first round, keeping the favourite one and rejecting the others [10]. This process repeats until all men either get a match or are rejected by all acceptable women, resulting in the outcome [10].

First model:

Assume there exists a set of men, and a set of women,

$$M = \{m1, m2, m3, m4, m5, m6\}$$

$$W = \{w1, w2, w3, w4, w5, w6\}$$

Their preferences are:

$$\begin{array}{ll} \geq m1: w1 w2 w3 w4 w5 w6 m1 & \geq w1: m1 m2 m3 m4 m5 m6 w1 \\ \geq m2: w1 w3 w6 w4 w5 w2 m2 & \geq w2: m6 m5 m4 m3 m2 m1 w2 \\ \geq m3: w6 w2 w1 w3 w4 w5 m3 & \geq w3: m4 m3 m5 m6 m1 m2 w3 \\ \geq m4: w3 w5 w2 w1 w4 w6 m4 & \geq w4: m3 m5 m4 m2 m1 m6 w4 \\ \geq m5: w6 w4 w5 w3 w2 w1 m5 & \geq w5: m4 m5 m6 m3 m1 m2 w5 \\ \geq m6: w2 w3 w4 w6 w1 w5 m6 & \geq w6: m3 m4 m6 m5 m2 m1 w6 \end{array}$$

The man-proposing defer acceptance outcome will be:

$$(m1, w1), (m2, w5), (m3, w6), (m4, w3), (m5, w4), (m6, w2)$$

The defer acceptance algorithm matching outcome has no blocking pairs.

Then a splitting of individuals will be conducted:

$$S1: \{m1 m2 m3 w1 w2 w3\}$$

$$S2: \{m4 m5 m6 w4 w5 w6\}$$

The Defer Acceptance algorithm will be processed for both S1 and S2, and the matching outcomes will be as follows:

$$\begin{array}{l} (m1, w1), (m2, w3), (m3, w2) \\ (m4, w4), (m5, w6), (m6, w5) \end{array}$$

A comparison between this outcome and the overall preference will show that there are three blocking pairs:

$$(m4, w3), (m6, w2), (m3, w6)$$

Three extra blocking pairs emerged comparing with the baseline outcome.

For the second model, also there are a set of men and women:

$$M = \{m1, m2, m3, m4, m5, m6\}$$

$$W = \{w1, w2, w3, w4, w5, w6\}$$

Their preferences are:

$$\begin{array}{ll} \geq m1: w2 w3 w4 w5 w6 m1 w1 & \geq w1: m2 m3 m4 m5 m6 w6 m1 \\ \geq m2: w2 w3 w6 w4 w5 m2 w1 & \geq w2: m6 m5 m4 m3 m2 w2 m1 \\ \geq m3: w6 w2 w5 w3 w4 m3 w1 & \geq w3: m4 m3 m5 m6 m2 w3 m1 \\ \geq m4: w3 w5 w2 w1 w4 m4 m6 & \geq w4: m3 m5 m1 m2 m4 w4 m6 \\ \geq m5: w1 w4 w5 w3 w2 m5 w6 & \geq w5: m4 m5 m3 m2 m1 w5 m6 \\ \geq m6: w2 w3 w4 w5 w1 m6 w6 & \geq w6: m3 m4 m1 m5 m2 w6 m6 \end{array}$$

The man-proposing defer acceptance outcome will be:

$$(m1, w4), (m2, w5), (m3, w6), (m4, w3), (m5, w1), (m6, w2)$$

There are no blocking pairs, and no one left unmatched.

Like the first model, the set will be split to two:

$$S1: \{m1 m2 m3 w1 w2 w3\}$$

$$S2: \{m4 m5 m6 w4 w5 w6\}$$

The Defer Acceptance algorithm will be processed for both S1 and S2.

(m2, w3), (m3, w2), (m1, m1), (w1, w1)
(m4, w5), (m5, w4), (m6, m6), (w6, w6)

The situation here is even worse, four individuals left unmatched, there exists four blocking pairs: (m3, w6) (m4, w3) (m5, w1) (m6, w2).

To summarize, in the first model, assuming there are no unacceptable partners, dividing individuals into two groups results in the emergence of blocking pairs. When unacceptable partners are introduced, a greater number of individuals remain unmatched.

The model suggests that blocking pairs consist of individuals who, despite being initially matched, later realize there are preferable and achievable alternative choices. In the context of marriage, these individuals are likely those who marry and then divorce in pursuit of better options. From a social perspective, an increase in blocking pairs indicates fewer stable relationships, likely leading to a higher divorce rate. Conversely, unmatched individuals are those who cannot find any acceptable partners. If someone cannot find an ideal partner to marry, they may choose not to marry at all, to casually date others, or to remain single. Therefore, a significant number of unmatched individuals in the model implies that the marriage rate could decline. In essence, the emergence of blocking pairs and unmatched individuals in the two-period model suggests that forcing young people to match in different periods could result in an increased divorce rate and a decreased marriage rate.

If the shift in ideology is indeed the cause of the marriage crisis, what could be the potential solutions? Two types of solutions are proposed.

The first solution addresses the inefficient matching outcomes caused by the constraint of forcing young people to match in different periods. This was not an issue in the past when Chinese parents were more conservative, often forbidding their children from dating in university. Under such circumstances, most individuals would be matched after graduation due to parental constraints, resembling a single-period model in the conceptual framework. Therefore, if a mechanism could ensure that most individuals match either during their university stage or after graduation, an ideal single-period matching scenario could be replicated. It is challenging to persuade all parents to allow their children to match in university, due to the unidirectional change in ideology, and neither the government nor any institutions have the authority to interfere in such personal behaviours. However, it might be feasible for all matching to occur in the second period or after graduation. In Southern China, many girls are still taught that they should marry if they have had sexual relations, or their parents might pressure them to marry early [2]. Thus, the real issue is not just people being matched in different periods, but also that many of those matched in the first period settle down and do not enter the matching process in the second round.

Such constraints are detrimental to women, and both governments and educational institutions have the authority to re-educate girls, freeing them from the confines of traditional ideology. Hence, providing more feminist education could teach girls that they should not rush their final decision and that they do not belong to the first man they date or have sex with, enabling them to settle only when they match with an ideal partner. This approach could help alleviate the marriage crisis.

The second solution draws inspiration from microeconomics, specifically the maximization problem. If we compare two optimization problems, both aimed at maximizing the same function $f(x)$, one unconstrained and the other constrained with conditions such as $x < a$, $x^2 < b$, etc. If all constraints in the constrained optimization problem are non-binding, the two problems will yield identical results. Transferring this to the matching context suggests that participants face additional constraints; they could previously match with all potential partners but are now limited in their choices. Identifying a division that replicates the benchmark outcome — where people matched in the single-period outcome are allocated to the same period — suggests that matching all individuals in one period is not necessary for an efficient outcome. Although achieving perfect division in the

real world might be challenging, approximations based on psychological research on people's mating preferences could prove useful. Universities could facilitate more stable matches by recognizing potential positive externalities if their students find ideal partners, and dating businesses could also contribute to more efficient matching.

4. Conclusion

In conclusion, this article explores the marriage crisis from the perspective of the ideological shift of parents using a dynamic matching model. There is previous research that focuses on the two separate problems, but these two phenomena have not been formally linked together before. The matching algorithm that is used to simulate the result is the defer acceptance algorithm because its result has predictable properties. The model demonstrates that when some parents restrict their children from dating in university and others do not, it leads to inefficient matching outcomes, resulting in a high divorce rate and a low marriage rate in contemporary China. The proposed solutions for addressing these inefficiencies include promoting the feminism ideology to liberate girls from early settlement and ensuring those who would be matched in the efficient outcome do so in the same period. There are still some deficiencies in this article, and gaps need to be filled. First, the solution that is being provided is still a rough idea; further study for more detailed questions will be necessary. What will be the most efficient way to promote the feminist ideology in different areas? What if, in some distant area, most adults are opposed to feminist ideas? Is it possible to systematically identify efficient matching pairs when the full preference of all individuals is not accessible? How can we motivate schools or other institutions to help form efficient matching outcomes? Second, the data to rigorously test the theory is still insufficient. If further researchers have access to such data, a formal test to validate the theory or falsify it will provide more precious insight into the question.

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