

Love, Money, and Old Age Support

Does Parental Matchmaking Matter?

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WORLD BANK GROUP

Development Research Group

Finance and Private Sector Development Team

February 2015

Abstract

Parental involvement in matchmaking may distort the choice of spouse because parents are willing to substitute love for market and household production, which are more sharable between parents and their children. This paper finds supportive evidence in a survey of Chinese couples. In both rural and urban areas, parent matchmaking is associated with less marital harmony between the couple, more submissive wives, and a stronger belief in old age support for the son. In contrast, its association with couple income differs by rural and urban regions, perhaps because of differences

in earning opportunities and in the enforcement of the one-child policy. Moreover, parent matchmaking is associated with more children for the couple and lower schooling for wives *only* in rural areas. Thus, in places with a stronger need for old age support, parents tend to be involved in matchmaking and use it to select submissive daughters-in-law to ensure old age support. The results render support to Becker, Murphy and Spenkuch (2015), who imply that parents would meddle with children's preferences to ensure their commitment to providing old age support.

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Acknowledgements: We wish to thank Yuyu Chen, William Evans, James Heckman, Bert Hoffman, Yi Lu, Vijayendra Rao, Seth Sanders, Mary Shirley, Jeffrey Smith, Liming Wang, Dali Yang, and the participants at the Chicago-Remin symposium on family and labor economics at the University of Chicago, U. of Maryland workshop, the AEA meetings, the PAA conference, and the Asian Conference on Applied Micro-Economics/Econometrics at Tokyo for constructive comment and suggestions. We are especially grateful to the late Gary Becker for his detailed comments at the Chicago-Remin symposium in which we presented an earlier version of a related paper. He encouraged us to consider the issues from the perspective of parents and old age support. This paper would not exist without his encouragement and detailed comments. We also thank the excellent research assistance from Lixin Tang. Huang gratefully acknowledges the financial support of SMU Research Grant 10-C244-SMU-002.

1 Introduction

Since the pioneering work on marriage of Becker (1973, 1974), marriage formation is often modeled as a matching process similar to labor market matching between workers and firms, where males and females meet each other randomly or are assisted by commercial agents (Weiss, 1997). This approach ignores a unique feature of marriage matching: marriage is not simply two individuals forming a new family; rather, it directly affects the welfare of their parents. An example of parental welfare being affected is old age support. Throughout history and still so in many developing countries today, old age support depends critically on children (Cheung 1972; Davidson and Ekelund 1997; Anderson 2003). How do parents ensure that old age support will be provided by children after they grow up? An interesting answer is provided by Becker, Murphy and Spenkuch (2015) (BMS (2015) hereafter), who argue that when old age support is mainly provided by adult children, parents will put in resources to meddle with children's preferences (i.e., to make them more altruistic) to ensure their commitment to providing old age support.

In this paper we examine how considerations of old age support shape marriage outcomes when marriages are matched by parents. We argue that parental matchmaking involves a tradeoff between children's welfare and parents' welfare. Parents that help matchmaking have a long-term relationship with the couple after the matching is done; such future interactions may distort incentives in the matching process and therefore affect matching outcomes. In particular, consider a son that chooses between self and parental match. His satisfaction with his spouse depends on expected marriage outcomes, including the couple's joint income, household production (such as home-provided old age support and the number of children), and the love between him and his future wife. From the parents' perspectives, they obtain a spillover from the couple's income, enjoy direct household production including the care and services provided in house by the couple (and especially from the wife) when they are old (BMS, 2015). Being altruistic, parents may also obtain an altruistic component originated from the son's welfare from the marriage.

Conflict of interest arises from the parents' keen interest in the couple's joint income and household production including old age support. Parents who expect to receive financial, emotional and old age support from their son after his marriage may care less about how attractive his wife is to him but more about how able she is in contributing to family income, wealth and/or old age support via household production (Cheung 1972). Parents may also care more about the compatibility of the daughter-in-law's preference with their needs for old age support. In other words, parents weigh their harmony with the daughter-in-law more heavily than the harmony between the future couple. As a result, the best wife candidate

in the eyes of parents likely differs from what is optimal to the son, even though parents are altruistic and care about the son's welfare. Thus, parent matchmaking carries an agency cost for the son, while it is at the same time a key instrument to ensure parental welfare as parents grow old.

Without search costs, the son would prefer self search to avoid the agency cost in parental matchmaking. However, parents and children differ in search costs. On one hand, parents may face higher search costs for love between the potential couple than the son. On the other hand, parents can have a wide access to potential candidates via their social networks. For instance, in places where parents are linked to a larger social network, search costs would be lower in parental matchmaking than in children's self search. Parental search can represent a greater advantage if parents are better at judging the candidate's character and earning ability. Thus, despite parental matching's agency cost, it sometimes could be optimal for the son to choose parental matchmaking because of the saving in search costs.

Other important reasons for parental matchmaking are culture, tradition and social support for the elderly. Throughout Chinese history (up to the early third of the 20th century), Chinese parents had a long tradition of parental control rights in children (Cheung, 1972).¹ In a traditional Chinese family, parents have authority over children even after they grow up, and they arrange children's marriages with some help from professional matchmakers. Thus, love marriage was an exception rather than the norm. Dramatic changes have occurred in the past century. Now in both urban and rural China, love marriage has become the norm. However, tradition still plays a powerful role, especially in rural China. Furthermore, only in the last ten years or so, rural households began to gain access to state-provided pension and health insurance. Adult children thus had been their primary source of old age support. The traditional norms, as well as the slow catch up of public support, help to explain why some parents still interfere heavily in the life of their adult children, and why filial piety (i.e., being respectful and obedient to parents) is still the key value in the Chinese family systems.

We incorporate both agency costs and search costs into a theoretical framework, and derive several testable implications. First, we predict that the love in a marriage should be lower for parents-involved matches than for self-matches. This is because parents value more than their son the monetary and household production components of his marriage, and they have a higher marginal cost in assessing love between their son and a potential daughter-in-law. Due to the agency cost, the overall marriage gain to the son, measured by love, income and household production but excluding search cost, would be lower under

¹This paragraph draws from Cheung (1972), which provides an intuitive, comprehensive, and entertaining explanations of many traditional family institutions such as parental ownership of children, blind marriage, daughter-in-law raised from childhood, dowery, and so on.

parents-involved matches than self matches. However, the sharable part of the marriage outcome could be lower or higher under parental matchmaking. It would be higher because parents put more emphasis on sharable market and household production than on love, and therefore the wife that is picked by parents tends to have a higher ability to contribute to the sharable productions. It could be lower when parents over-emphasize goods produced within the household and the preservation of old social structure at the expense of market productivity. In this case, the couple's income can be lower in parents-involved matches, but key inputs (or traits) for household production such as the number of children, willingness to provide old age support, and the submissiveness of the wife would increase.

Following BMS (2015), we further discuss how the need of old age support shapes the effect of parental matchmaking on marriage outcomes. For financially constrained parents who have to rely on their children for old age support, it is difficult to commit adult children to providing old age support. One way to obtain the commitment is parental investment in shaping children's preferences (when they are young) so that they are more altruistic toward parents;² as a result, parents get more old age support, which in turn motivates parents to invest optimally on children's human capital. Though BMS (2015) deal only with the preference of the son (in our context), their basic idea can be readily applied to the situation of parent matchmaking, which can be another instrument to meddle with children's (or children-in-law's) preferences. Although it is largely impossible to change the preference of a daughter-in-law after marriage, parents can help to select the "right" kind of daughter-in-law: she had better be submissive to family authority, be cooperative in delivering old age support, and be diligent in doing household chores. Under the assumption that more children imply more old age support, parents may also use matchmaking to ensure that their son has more children to provide him old age support in the future. Because urban areas rely less on children for old age support (and enforce the one-child-policy more vigorously), the demand for the number of children under parental matchmaking would be lower in urban regions than in rural regions. Moreover, since urban areas present more market opportunities, urban parents may emphasize more on sharable monetary income than rural parents.

We take these predictions to a sample of about 3400 rural couples and 3800 urban couples in 1991 in seven Chinese provinces. Here 48% of rural couples and 14.5% of urban couples were married by parent-involved matchmaking; the rest by either self search or friend introduction (both of which are referred to as self match). We examine a number of marriage outcomes, including the degree of domestic harmony to capture the emotional output of marriage, the joint income of husband and wife to capture the couple's economic well-being,

²See Heckman (2008) for evidence on how parent influence on children is more prominent when children are young.

and measures of inputs to sharable household goods such as the number of children, the son's belief in old age support, and the submissiveness of the daughter-in-law.

Comparison across parental and self matching largely supports our theoretical predictions. In both rural and urban areas, parent-involved matches yield a lower marital harmony; in contrast, parent-matched marriages yield higher couple income in urban areas, but lower income in rural areas, all after we control for individual-level observable and unobservable attributes that may lead to selection in parental matchmaking. In rural areas, parent-matched marriages are associated with more children. Moreover, wives in parent-matched marriages tend to hold more traditional views that emphasize women's secondary status within a family. The different results in rural and urban areas can be explained by relative abundance of labor market opportunities and weaker traditional beliefs in urban relative to rural areas. Our results are consistent with Becker, Murphy and Spenkuch (2015): parents can meddle with children's (or children-in-law's) preferences to ensure old age support. We further provide evidence that parental matchmaking is an important vehicle to achieve this goal.

In addition to offering evidence in support of BMS (2015), this paper contributes to the marriage literature by highlighting the economic tradeoff in parental matchmaking. Unlike the classical focus on the effects of sex ratio (Angrist 2002), divorce law (Chiappori 2002), or educational composition on marriage outcomes, we show that the institutional details of how the match is accomplished in the first place have important implications on marriage outcomes.³ In a related paper, Edlund and Lagerlof (2006) show that the shift from parental to individual consent in marriage allows the young couple instead of their parents to receive the bride price and thus facilitates economic growth. We differ in that our focus is not on who controls resources in a marriage, but on the economic tradeoff of parental matchmaking for both parents and children. The tradeoff between love and money has been explored by Fernandez et al. (2005) but from the perspective of marriage sorting on skills and its relationship with income inequality; they do not discuss matchmaking methods.⁴ Our paper is also related to Cheung (1972), who argues that many traditional Chinese family practices,⁵ including marriage patterns, are shaped by parental considerations to maximize family wealth. That paper does not focus on the effect of matchmaking methods; neither does it offer empirical evidence.

In a short paper, Huang, Jin and Xu (2012) use the same data source to examine the

³Some other papers related to marriage include Zhang and Chan (1999), Foster and Rosenzweig (2000), Chiappori et al. (2002), Suen, Chan and Zhang (2003), and Huang et al. (2009).

⁴See also Blood (1967) for descriptive analysis of love and arranged marriages.

⁵China-specific papers and books on marriage include Chao (1983), Xu and Whyte (1990), Cohen (1992), and Zimmer and Kwong (2003), none of which examines how parent matchmaking affects marriage outcomes and how considerations of old age support affect these effects.

effect of parental matchmaking on love and couple income in urban China. This paper differs from Huang, Jin and Xu (2012) in several ways. First, we offer a formal model and expand the sharable production from joint couple income to many non-marketable household productions such as the number of children and the submissiveness of the wife. Second, we examine the issue from the parents' perspective in old age support and explain why parent matchmaking might affect marriage outcomes differently in urban and rural areas. When we presented Huang, Jin and Xu (2012) in a conference at the University of Chicago, Gary Becker presented what later became BMS (2015) and encouraged us to go beyond what is in Huang, Jin and Xu (2012) to consider parents' need for old age support.⁶ This paper incorporates his suggestions.

Finally, our paper is related to the literature of intergenerational relationship and old age support. Researchers have explored how intergenerational relationships affect old age support (see, for instance, Ikkink, Tilburg and Knipscheer, 1999; Hoff, 2007). However, none has explored the role that matchmaking methods play in facilitating old age support.

The rest of the paper is organized as follows. Section 2 describes the theoretical insights, Section 3 summarizes the data, and Section 4 presents the empirical results. A brief conclusion is offered in Section 5.

2 Theoretical Framework and Empirical Identification

In this section, we first present an agency model of parent matchmaking and then interpret it in the context of old age support in rural and urban China. The last subsection discusses empirical implications and how we plan to test them with data.

2.1 Agency model of parental matching

Consider the marital decision of a young man, who has finished schooling and started working to earn a living. The search process for a potential wife can either be conducted directly by his parents or by himself. The process that yields a higher net expected utility to him will be implemented. This set up is meant to capture the current practice in China, where marriage in general cannot be forced upon by parents, and males are usually the one who

⁶One of us (Xu) presented an earlier version of Huang, Jin and Xu (2012) at the Chicago-Remin conference on family and labor economics in 2012 at the University of Chicago, right after Gary Becker presenting an earlier version of Becker, Murphy, Spenkuch (2015). For a new researcher working on marriage topics, having Becker's comment on an early draft was no doubt the best luck he could encounter. (For this, we thank Dali Yang for inviting us to the conference.) Indeed, Becker offered so many constructive comments that he completely changed our perspective on the issue. His main suggestions were that we should also consider parental matchmaking from the parents' point of view, that parents might use this method to ensure old age support, that preference might be important (which was a key point in his presentation), and that parental matchmaking may not be inefficient given specific institutional and social arrangements.

initiates and proposes marriage.⁷

2.1.1 Basic Set up

An individual's benefit from marriage can be categorized into two dimensions: one is the economic gain from joint household production, and the other is emotional support from the spouse. The total benefit is affected not only by the characteristics of husband and wife, but also by their matching quality.

Let $h_m \geq 0$ denote the young man's human capital level, which affects his earning and his intra-household productivity. The human capital may capture, for example, his character, innate ability, years of schooling, communication skills, and so on. Similarly, let $h_f \geq 0$ denote his potential wife's human capital level. Combined, h_m and h_f determine the total marriage gains $f(h_f, h_m)$, which reflects both the couple's household production output and joint income earned from markets. We assume $f(0, 0) > 0$, $f_i > 0$, $f_{ij} > 0$, and $f_{ii} \leq 0$ for $i, j \in \{1, 2\}$.

Another key element in marriage is match quality, denoted by α which is idiosyncratic to the couple and not readily observed by others; it can be interpreted as love or attraction between two persons, which is often unpredictable based on commonly observed characteristics. This implies that α can be treated as uncorrelated with h_f . Given our assumption that marriage is always implemented with mutual consent by the young couple, the emotional output of marriage can be normalized as positive and $\alpha > 0$ is assumed.⁸

For a young man with h_m , the overall gain from marrying a wife with h_f and α is $(\beta + \alpha)f(h_f, h_m)$, where $\beta > 0$. One may think of the parameter β as capturing the husband's share of material gain from the marriage, while α captures the degree of emotional benefit.

The parents' gain from their son being married to a wife with characteristics (α, h_f) also contains two parts: one is the public good component $f(h_f, h_m)$ that generates a utility of $\gamma \cdot f(h_f, h_m)$, and the other is the altruistic component $\delta(\beta + \alpha)f(h_f, h_m)$ because they care about the welfare of their son, where $\gamma > 0$ and $\delta \in (0, 1)$. Since the love α between the husband and wife is by definition consumed privately by the couple themselves, it does not affect the parents' welfare directly. The wife's characteristics that may affect the whole family, such as pleasant personality and beauty, are already indicated by the wife's human capital h_f , which as mentioned earlier is broadly defined and not restricted to formal schooling.⁹

⁷It is useful to note that a similar model can be used to study the search process of a young woman, and it can also be readily extended to the case where parents arrange the marriage without consent of children.

⁸This assumption is for simplicity only, as the same results can be derived for the case with $\alpha \leq 0$.

⁹Parents may have other gains from doing matchmaking than the elements already shown in the model; as long as these concerns are not identical with those of their children, our main results should hold.

2.1.2 Searching Costs

Marital search is costly. If searching himself, the son has to bear the search cost, which is $\eta_m c(\alpha, h_f, h_m) > 0$, where $\eta_m, c_1, c_2 > 0$ and $c_3, c_{31}, c_{32} < 0$. This means that it is more costly for a man with a given h_m to find and persuade a woman with better quality (with higher α or h_f) to become his wife, and the search cost for a wife of a given quality is lower if the man's h_m is higher. The parameter η_m denotes the effect of some common elements on the search cost by oneself for *all* individuals in a marriage market and is thus not dependent on idiosyncratic conditions of searching.

If the marriage is through parent search, parents will bear the search cost, which presumably depends on how intelligent they are in assessing α and how well they are connected with relevant social networks that have access to potential candidates. The parents' degree of competence in this matter is denoted by $h_p \geq 0$. The parental search cost is $\eta_p s(\alpha, h_f, h_p) > 0$, where $\eta_p, s_1, s_2 > 0$ and $s_3, s_{31}, s_{32} < 0$. Similar to η_m , the parameter η_p denotes some common factor that affects the cost of searching by all parents. To capture the idea that the match quality α is couple idiosyncratic, we assume that, in order to achieve the same level of α , the parents' search cost cannot be too low compared with the direct search by their son, i.e., $\eta_p s_1 \geq \delta \eta_m c_1$ for any given h_m, h_f , and h_p .

2.1.3 The Son's Optimal Choice of Search Methods

The son decides whether to search for his marriage partner himself or to delegate the search to his parents. If he searches himself, his objective function is

$$U^* \equiv \max_{\alpha, h_f} (\beta + \alpha) f(h_f, h_m) - \eta_m c(\alpha, h_f, h_m).$$

The corresponding optimal choices of his potential wife's characteristics that result from searching by himself are denoted by α^* and h_f^* , which are characterized by the following first order conditions

$$f(h_f^*, h_m) - \eta_m c_1(\alpha^*, h_f^*, h_m) = 0, \tag{1}$$

$$(\beta + \alpha^*) f_1(h_f^*, h_m) - \eta_m c_2(\alpha^*, h_f^*, h_m) = 0. \tag{2}$$

If his parents manage the search, their objective function is

$$\tilde{U} \equiv \max_{\alpha, h_f} [\gamma + \delta(\beta + \alpha)] f(h_f, h_m) - \eta_p s(\alpha, h_f, h_p),$$

where the corresponding optimal choices are denoted by α^{**} and h_f^{**} . The necessary condi-

tions that characterize α^{**} and h_f^{**} are

$$\delta f(h_f^{**}, h_m) - \eta_p s_1(\alpha^{**}, h_f^{**}, h_p) = 0, \quad (3)$$

$$[\gamma + \delta(\beta + \alpha^{**})]f_1(h_f^{**}, h_m) - \eta_p s_2(\alpha^{**}, h_f^{**}, h_p) = 0. \quad (4)$$

It is not difficult to see that in general the optimal wives are different between these two search processes.

Then the son's choice problem is

$$\max\{U^* \equiv (\beta + \alpha^*)f(h_f^*, h_m) - \eta_m c(\alpha^*, h_f^*, h_m); U^{**} \equiv (\beta + \alpha^{**})f(h_f^{**}, h_m)\}, \quad (5)$$

where the second term is the son's net utility when his parents do the search for him. Searching by himself will prevail if $U^* \geq U^{**}$, while his parents will be delegated to do the search if the opposite $U^* < U^{**}$ is true.¹⁰ The main implications of the optimal solution to this problem are summarized by the following propositions (see Appendix A for proof):

Proposition1: Effects of Parental Matchmaking: The emotional output and the overall marriage gain to the son are lower under parental involvement, i.e., $\alpha^* f(h_f^*, h_m) > \alpha^{**} f(h_f^{**}, h_m)$ and $(\beta + \alpha^*)f(h_f^*, h_m) \geq (\beta + \alpha^{**})f(h_f^{**}, h_m)$ hold, respectively. But it is possible that the couple's joint household production is higher, i.e., $f(h_f^*, h_m) \leq f(h_f^{**}, h_m)$ may be true.

Proposition2: Adverse Selection of the Son: There exists a unique threshold value $h_m^\#$ of the son's human capital level such that he will choose to search for a marriage partner himself if $h_m \geq h_m^\#$ or delegate his parents to do the search for him if $h_m < h_m^\#$. The threshold $h_m^\#$ increases with h_p , γ and η_m .

Proposition3 : Positive Selection of Parents: There exists a unique threshold value $h_p^\#$ of the parents' competence level such that they will be delegated to do the search iff $h_p > h_p^\#$, where $h_p^\#$ increases with h_m but decreases with γ and η_m .

These propositions suggest that the effects of parental involvement in marriage search can be different for the two dimensions of marriage output: it is always negative for the emotional output, which is driven by the fact that the matching quality – love α – is idiosyncratic to the couple and thus not easily observed or shared by others; the effect on the economic output, however, can be either negative or positive. The reason for a positive effect is because the household output can be shared among family members and thus parents have more incentives to care about the potential wife's human capital. On the other hand, parental

¹⁰If parents can arrange the marriage without consent from the son, as is the case in traditional society, the parents are the final decision maker and their objective function would be $\max\{[\gamma + \delta(\beta + \alpha^*)]f(h_f^*, h_m); [\gamma + \delta(\beta + \alpha^{**})]f(h_f^{**}, h_m) - \eta_p s(\alpha^{**}, h_f^{**}, h_p)\}$.

involvement could have a negative effect on the economic output and is still an optimal choice from the son's perspective if parental matchmaking leads to substantial savings in search cost.

Propositions 1-3 also suggest that parental involvement in marital search is endogenous to individual attributes; it is more likely to happen when the son's human capital level h_m is lower or the searching cost η_m is higher, or when his parents benefit more from the household public good (when γ is higher) and have lower searching costs (when h_p is higher and η_p is lower). In other words, in a fixed marriage market, there are two sources of self-selection in the choice of marital search methods: one is from the son and the other is from the parents; a young man with a lower human capital, or with parents that are more capable or more motivated is more likely to rely on parental search.

Figure 1 illustrates the positive relationship between $h_m^\#$ and $h_p^\#$ and how their combination affects the endogenous choice of marital searching methods. In the graph, a young man with human capital h'_m and parents' effectiveness h'_p , for example, will optimally choose to rely on his parents to search for a potential wife because his human capital is lower than the threshold level $h_m^\#$ corresponding to his parents' effectiveness h'_p . This choice can also be understood from the alternative perspective: given his human capital level h'_m , his parents are competent enough (since h'_p is higher than the corresponding threshold level $h_p^\#$) to find a good wife for him so that he does not bother to search by himself.

2.2 Parental Perspective in light of Old Age Support

The above agency model is based on the child's perspective, that is, it is his decision to choose self search or parent search. In this subsection, we interpret the model from the parent's perspective, especially in light of their need for old age support.

Since old age support entails financial support and home services from the married couple, parents, if financially constrained, have extra demand for the daughter-in-law's ability in producing labor income and/or home services. This implies that the attributes that can contribute to these production abilities, for example schooling for labor income and submissiveness for home services, will be favored under parental matchmaking.

The rural-urban differences in the provision of old age support have implications on what types of marriages and wife traits the parents would prefer. In urban areas, parents tend to have better access to old age support through state-provided pension and health insurance if they have worked at a government unit, a state-owned enterprise, or a state-funded non-profit organization. This significantly reduces the financial risks faced by old people and their

adult children. In sharp contrast, until the 2000s almost all rural residents had no access to state-provided pension or health insurance, unless they held an urban hukou as a teacher or were government officials (which were rare). In our model, a greater reliance on adult children for old age support can be interpreted as rural parents putting more weight on the couple's sharable production relative to the son's welfare (i.e. higher γ). This implies greater agency cost under parental matching, as the wife candidates filtered by parents will demonstrate more attributes preferable by the parents for their old age support ($\partial h_f^{**}/\partial \gamma > 0$ mathematically).

Strong implications on what types of wife the son would want are also provided by BMS (2015), which modifies the implications of our model significantly. So far we assume that the son cares only about his own welfare while parents are altruistic, following the standard assumption in Becker's Rotten Kids Theorem (Becker 1981). BMS (2015) argue that parents have incentives to manipulate the son's preference when he was young so that he is more altruistic towards the parents' old age support when he grows up. This is consistent with the traditional value of Chinese families, which emphasizes that it is the son's duty to continue the surname by having children and to take care of parents when they are old. If the son's altruism is incorporated in our model, the son's preference will be more aligned with the parent's preference (e.g. allow β to increase with γ). Not only does this reduce the agency cost of parental matchmaking (thus leading to more parental matchmaking), but it also encourages the son to choose a wife closer to the parents' preferences even if he decides to search by himself. BMS (2015) thus reconfigure the forces underlying the costs and benefits of parent matchmaking so that the benefits now loom larger, and parents' demand for certain traits—say, submissiveness of the daughter-in-law—is more likely to win out in the end. It also renders the son to be more willing to delegate the search to parents.

Another key difference between rural and urban residents is that rural couples have more freedom in choosing how many children to have, and this freedom affects the impact of parent matchmaking on the number of children for the couple. Though both rural and urban China adopted one-child policy since early 1980s, enforcement is looser in rural areas. One reason is that rural labor is an important input for agricultural production, and without access to pension and health insurance, having a greater number of children is an important way to ensure old age support. Furthermore, enforcement is more difficult in rural areas: while urban employers, especially state-owned enterprises and government units, can threaten (and often do threaten) to demote, fine, or even fire those who attempt to have more than one child, such threats are not credible in rural areas. Thus, rural residents, if they want, can have more children than urban couples.

How would parent matchmaking affect the number of children for the rural couple then?

Due to the lack of old age support, parents would need more children. However, by the time when the adult son gets married, most parents have already completed their own fertility decisions and they would not benefit directly from the number of grandchildren that the couple have. Yet still, parents would demand more children for their son: altruistic parents anticipate the son's need for old age support and prefer a traditional wife that provides more children for their son. Thus, parental matchmaking is likely to be associated with a greater number of children for the couple. In contrast, with less freedom in fertility, urban parents may resort to other means to ensure old age support from their children, for example, aiming for higher human capital and higher couple income, even if that means less adherence to traditional values.¹¹ We thus expect a smaller or no effect of parent matchmaking on the number of children, but a more pronounced effect on daughter-in-law traits that are more conducive for labor market income and/or in-home provision of old age support.

2.3 Empirical Issues

To summarize, we argue that some conflict of interest may arise between parents and son because parents rely on their married son for old age support and other sharable production of the couple, but love is more or less private consumption within the couple.¹² This conflict of interest, combined with search cost in the marriage market, leads to an interesting relationship between parental matchmaking, husband's belief about old age support, wife characteristics, and marriage outcomes such as love and joint couple income. The main insight is that parents involved in matchmaking prefer a wife that can provide more sharable production, even if such preferences lead to less love within the couple.

However, this prediction is subject to the constraint of the son's endogenous choice of the matchmaking method. In particular, the choice of search method may not only be affected by random elements, but also by the son's and his parents' characteristics as reflected by the adverse and positive selection problems in the above propositions.

If we can perfectly control parents' characteristics (h_p, γ) , then the average marital quality

¹¹There are other factors to consider when discussing the effect of parent matchmaking on the number of children. Parents may view too many children as competition for the limited resources that the couple have. In other words, what grandchildren have, the grandparents have not. On the other hand, grandparents tend to enjoy the companion and even household production from grandchildren (e.g., fetching water where there is no indoor water), and this would result in a positive relationship between parent matchmaking and the number of children for the couple. The overall effect of parent matchmaking on the number of children may therefore be ambiguous. However, children tends to be less costly to raise in rural areas due to intergenerational cohabitation, the competition effect should be weaker in rural areas, again pushing for a more positive and pronounced relationship between parent matchmaking and the number of children.

¹²That love is a private good is nicely illustrated by an episode of Seinfeld. Jerry and Elaine, once lovers and then friends for a long time, became lovers again. Witnessing Jerry and Elaine's intimate behavior, Kramer, Jerry's old friend and neighbor, blurted out, "I like you two so much more when you were friends!"

of husbands with parental involvement must be lower than others even when their wives are of exactly the same quality because the husbands in the former group have lower human capital ($h_m < h_m^\#$); this is the adverse selection effect of sons. In contrast, when the husband's characteristics are fully controlled, those with parental involvement must have had more competent parents ($h_p > h_p^\#$) with respect to searching, which implies that their wife's overall quality, especially their human capital level h_f^{**} , may be higher than others', and hence their marital quality may also be higher; this is the positive selection effect of parents. Thus, without properly accounting for these two sources of the endogeneity problem, the OLS estimated coefficient of parental matchmaking can be either higher or lower than the true effect, depending on which selection is dominant.

Our approach to address this challenge is to use an instrumental variable that affects the choice of search method but not wife characteristics and marital outcomes directly. Consider two identical marriage markets A and B that are mutually exclusive. Due to some exogenous shocks, the threshold level of the son's human capital $h_m^\#$ as a function of parents' characteristics h_p shifts down in market A but not in B. This can be achieved in the model, for example, by a lower η_m , which affects the search costs of *all* individuals in a marriage market. As one can see in Figure 1, this downward shift in market A will induce a group of young men, who are between the new and old threshold curves, to change their search method from parental involvement to self search. As a result, identical individuals make different choices: those in market B have parental involvement while those in market A adopt self-search. Comparing their difference in wife characteristics and marital outcomes will filter out the endogeneity in the choice of search method driven by the son or the parents' individual characteristics.

Empirically, for a husband born in year t , we construct the instrument for his choice of parental matchmaking as the percent of other husbands of similar ages in the same market that chose parental matchmaking. Here we define market by the interaction of province dummy and rural dummy. Similar age is defined as those who were born in the same year or one to three year earlier. Admittedly, this market-level instrument may capture local culture and tradition that affect people's choice of spouse and style of marriage life. Unfortunately, such culture and tradition evolve slowly, so that the main variations in our instrumental variable are cross-sectional. This implies that we cannot include provincial fixed effects without swamping the power of instrument, but we do control for average income and average schooling at the district level in urban areas and the township level in rural areas.¹³ In this sense, our instrument is good at filtering out individual-level selections as articulated in the

¹³The district level in urban areas is one level below the (county-level) city in China's administrative ladder.

above propositions but may pick up unobserved local culture and tradition independent of average income or schooling in local city/township.

In particular, we estimate the following specification:

$$Y_i = \alpha_0 + \alpha_{rural} + \beta_1 \cdot ParentMatched_i + \beta_2 \cdot Z_i + \beta_3 \cdot Z_{township} + \epsilon_i$$

where Y_i denotes marital outcomes, wife characteristics, and husband i 's belief in old age support; α_{rural} is a dummy for rural areas; Z_i denotes husband's observable characteristics such as age, religion, schooling, and party membership (we also include his parents' schooling); $Z_{township}$ denotes average income and schooling at district/township level; and $ParentMatched_i$ is a dummy indicating whether i 's parents were involved in the search for his wife.

We shall estimate this equation with both OLS and 2SLS. While β_1^{ols} suffers from individual-level selection issues, β_1^{2sls} is free of such issues. Because the variation of our instrument is mostly cross-sectional, we should interpret the 2SLS estimate in the following way: if i lived in a different marriage market that is more oriented towards parental matchmaking and this relocation increases his own probability of using parental matchmaking by Δ_p , then the outcome Y_i would change by $\beta_1^{2sls} \cdot \Delta_p$. Markets that differ in parental matchmaking norms are likely to have different family value and different social networking patterns along with the matchmaking norm. These differences, if independent of township-level average income and average schooling, are embodied in our instrument. In other words, the 2SLS estimate captures the effect of moving from a market with low parent-matchmaking norm (and less traditional value) to a market with high parent-matchmaking norm (and more traditional value). It does not capture the effect of moving from low to high parent-matchmaking norm, conditional on the same level of (unobserved) traditional value. In other words, this instrument does not allow us to separate the effect of parent matching norms and other highly correlated traditional values.

3 Data and Measurements

3.1 Data Source

We use the Study of the Status of Contemporary Chinese Women (SSCCW), a data set collected jointly by the Population Institute of Chinese Academy of Social Science and the Population Council of United Nations in 1991 (Institute of Population Studies, 1993). SSCCW collects information on personal traits, marriage characteristics, fertility, work, intra-family arrangements, and gender norms. The survey used stratified random sampling to

select households from one municipality (Shanghai) and 6 provinces (Guangdong, Sichuan, Jilin, Shandong, Shanxi, and Ningxia). They scatter across China in the southeast, south, southwest, northeast, east, middle and north, respectively. As migration across different provinces was not common in China by 1991, each province can be regarded as a separate marriage market. Another important dimension that cuts across areas is the urban-rural distinction. The rigid Hukou system effectively blocked people from migrating between cities and countryside at the time of the survey. Furthermore, although our data consist of married couples only, we do not face much selection in divorce. The divorce rate around our sample period, 1990, was only 0.71 per 1000 couples, far below the corresponding numbers in many countries in 1995, which are 4.44 in the U.S. and 1.59 in Japan (Zeng and Wu 2000).

SSCCW interviewed husband and wife separately. Here we focus on the male sample because a Chinese couple tends to live with the husband's parents by tradition (if they live with any parent at all), and therefore the paternal parents have clearer incentives to value a marriage candidate's ability in economic and home production. Our sample thus consists of husbands. Wife characteristics will be examined as dependent variables, as they are the result of the choice of the husband (and his parents if they were involved in the search process).

3.2 Old Age Support From Adult Children

A key assumption in our theoretical framework section is that children, especially those in rural areas, are key providers of old age support, and parents may prefer certain types of daughter-in-laws to deliver them old age support. We now provide some suggestive evidence from SSCCW to validate our assumption.

Based on a few questions on old age support, a significant share of residents, especially the rural ones, rely more on their children for old age support. On the question of "what you expect to get from your son when you grow old", 4.6% of urban husbands answered financial support, 43.5% answered home services, 38.2% answered emotional support, and 13.2% answered nothing. In comparison, rural husbands expected more old age support from their sons: 19.8% of them expected financial support, 67% expected home services, 9.1% expected emotional support, and only 3.8% expected nothing. Similar patterns occur on a parallel question of "what you expect to get from your daughter when you are old", but both urban and rural husbands expected more emotional support from their daughters (41.5% in urban and 29.8% in rural), and less financial support (2.4% urban, 11.5% rural) than from sons. On home services, urban husbands expected about same home services from daughters (44%) as from sons (43.5%), while rural husbands expected less home services

from daughters (51.4%) than from sons (67%).

Wives are likely to contribute more to old age support than husbands inside the household. The SSCCW survey asked urban husband and wife separately on “who is the main provider” of certain types of house work, including “home service to the elderly”. Conditional on existing need of home service to the elderly, 40% of husbands and 57% of wives said they were the main service provider in the house. Husbands seem to have a bias in exaggerating their role as the main contributor: while only 39% of husbands admitted that their wives being the main provider of old age support, 57% of wives claiming themselves being the main provider. Similarly, 23% of wives credited their husbands as the main contributor of old age support in the house, while 40% of husbands credited as such themselves. Unfortunately, this question was not asked in the rural sample, but rural couples were more likely to live with the husband’s parents at the time of marriage (59% rural, 31% urban, according to husband’s answer), and it is quite rare to live with the wife’s parents in both rural and urban areas (5% rural, 6% urban, according to husband’s answer). At the time of the survey, fewer rural couples were still living with the husband’s parents (29% rural and 39.9% urban), but this is partly because more rural parents have passed away, and rural parents have more children to live with so that the probability of living with a particular child would be lower.

To recap, the survey data confirm that rural parents rely more on their children for old age support, and old age support is typically provided by son and daughter-in-law. Between the couple, the wife is more likely to provide home services to the elderly if such need arises. All these suggest that parents have strong incentives to participate in the choice of daughter-in-law, especially in the rural areas.

3.3 Key Variables

The question on matchmaking methods asked how an individual met his or her spouse initially. There are four original categories in the data: introduced by parents or relatives, by friends, by themselves, and by other means. We define a dummy of *ParentMatch* equal to one if the husband has been matched by the introduction of parents or relatives and 0 if otherwise. We cannot distinguish parents from relatives partly because the distinction is not available in the data, partly because relatives are an integrated part of the parents’ social networks to facilitate the search process. A perhaps more debatable decision is that we do not differentiate couples initially introduced by friends from those who met by themselves. The reason is that these two groups are similar: in both cases, it is the young people themselves, not their parents, that conducted the search process and bore the search cost. And indeed, empirically these two groups are very similar.

The survey also asked whether the marriage decision was made by self or parents. Subjects were asked to choose from “self decision, parental consent”, “self decision, parental disapproval”, “self decision, parental consent on both sides”, “self decision, parental disapproval on both sides”, “parental decision, self indifferent”, “parental decision, self consent” and “parental decision, self consent by force.” Answer to this question differs greatly by whether *ParentMatch* is equal to one. For the sample of husbands, 33.8% of them had parental matchmaking. Among those parent matched marriages, 26.6% were parental decision rather than self decision. In comparison, only 6.9% of self matched marriages were parental decision.

Rural parents seem to play a more important role in their children’s marriage life than urban parents. This is well reflected in our data: 48% of our rural couples were married via parental matchmaking, while this percentage is only 14.5% for urban couples. Moreover, 30.5% of parent-matched husbands had his marriage decided by his parents in rural areas, as compared to 13.8% in urban areas.

From a husband’s perspective, marriage outcomes are represented by love, joint income, non-marketable household production, and wife traits. Given the difficulty to quantify love, we follow Huang, Jin and Xu (2012) to proxy the emotional dimension of marriage by an indicator of harmony within a couple. The survey question most closely related to the emotional aspect of marriage asked: "How do you usually reconcile with your spouse when you have conflicts?" We define a harmony index as follows: it is equal to 2 if the couple reported no conflicts, 1 if conflicts are usually solved by mutual compromise, and 0 if conflicts are solved by either unilateral compromise or third-party mediation by family members, relatives or friends. Third-party involvement in conflict solution is a rare event in the data (only 3% reported so) so we do not distinguish it from unilateral compromise. The implication is that "no conflicts" is the best outcome, while "mutual compromise" comes next in the ranking, which is arguably less costly or more effective than unilateral compromise and third-party mediation. Mutual compromise is better than unilateral compromise also because constant reliance on unilateral compromise eventually leads to resentment and the loss of love. In our view, this harmony index captures the essential meaning of a couple’s matching quality: couples with better matching quality are less likely to have conflicts and more capable of solving conflicts in an effective way. Though imperfect, the above-mentioned harmony index is a more appropriate measure of the emotional output of marriage in our context than others used in the literature. In modern western societies, for example, whether a marriage ends up in divorce is a natural measure of marital quality. The extremely low divorce rate in China by 1991, however, renders this measure less useful.

Joint couple income is measured by the summation of the annual incomes of the husband

and of the wife. This is a key measure for the market component of marriage gains. It is perhaps useful to keep in mind that maximized couple income could be achieved either by both work for market incomes or by specialization, that is, one works for the market while the other specializes in household production.

We also measure wife traits to study whether parent matchmakers systematically prefer wives of certain traits. As we have emphasized so far, parents have strong incentives to obtain old age support from children, and daughter-in-laws are especially instrumental in delivering home services for old age support. Indeed, old age support can be obtained in two ways: money transfer from children, or direct provision of home services to the elderly.¹⁴ Because old age support in the household is usually provided by the wife, its effective delivery requires values and beliefs conformative to a traditional society. Indeed, for thousands of years in Chinese history, a top value for children is filial piety (Cheung, 1972), which emphasizes being obedient and submissive to parents. Indeed, the second Chinese character for filial piety, *xiao shun*, means literally being submissive and following orders of parents. This is especially important for picking a wife for the son: the son was already trained to be obedient to parents within the household for all the years, but the wife will join the family as an adult and it is almost impossible to train her to be submissive after marriage. Thus, matchmaking parents would prefer to pick a young woman that have already submitted to those submissive values (Cheung, 1972). Such values would be conducive to the happiness of the parents and to the provision of old age support.

To measure the submissiveness of the wife, we rely on three specific measures and one aggregate measure. First, *Wife Career Unimportant* is a dummy variable indicating an answer in agreement to the following statement: a wife's career achievement should not exceed that of her husband. This indicates conformity to the traditional value of superiority of man over woman, and makes husbands' wishes easier to carry through in the family. Second, *No Good Male Friend* is a dummy variable indicating the belief that a married woman should not have a good male friend. Again, this is a preventive belief that helps to maintain the value of parental investment in picking a submissive and cooperative wife for their son. With such a belief, there is a much lower chance of marriage disruption, and parent investment in picking the right wife would have a longer horizon to bear fruit. This is very similar to what Cheung interpreted about the Chinese marriage practice of "blind marriage" (i.e., groom and bride were supposed to meet each other for the first time upon the completion of the procedure on the wedding day): it disallows a young man's love for

¹⁴Old age support through household production does not necessarily entails cohabitation. As long as parents and their adult children live sufficiently close, direct household production of old age support is feasible.

beauty to stand in the way of maximizing family wealth via arranged marriages. Third, *Cannot Reject Sex* is a dummy variable that is based on the following question: “do you think a wife can reject her husband’s request for sex? 1. yes, 2. no, 3. yes but hard to get it accomplished.” The answers of 2 and 3 imply *Cannot Reject Sex* to be one. Finally, the three measures are summed into an aggregate index, *Wife Submissiveness*. Clearly, a higher value of *Wife Submissiveness* implies a wife that is more submissive, easier to manipulate, and more conducive to parents’ old age support.

Finally, we also measure whether the husband has belief in providing old age support. Having such a belief is a key part of Becker, Murphy and Stenkuch (2015): to ensure old age support, parents invest resources in manipulating children’s preferences so that they are more altruistic toward the parents. Because we argue that parental matchmaking leads to a better fulfillment of parents’ agenda which includes old age support, we follow Becker, Murphy and Spenkuch (2015) to examine whether parental matchmaking is systematically associated with the son having stronger preferences for providing old age support. In the survey, one question asked: “in your view, what is the best way to allocate household assets? 1. to distribute evenly among sons and daughters, 2. mainly to sons, 3. mainly to daughters, 4. to the sons or daughters that provide old age support.” When the answer is 4, the newly created dummy variable, *Reward for Providing Old Age Support*, is set equal to 1.

One may argue that *Reward for Providing Old Age Support* can be interpreted as a measure of incentives rather than preferences for providing old age support. We however interpret it mainly as a belief: the wording is not about whether the husband in our survey had received an ex-ante offer of inheritance conditional on providing old age support. Such contracts are uncommon and non-enforcible in China. Rather, the question is among a long list of belief questions, and it is worded as whether the surveyed husband would reward the care-giving children more household assets for providing old age support when they are old. When the husband believes that providers of old age support deserve more household assets, two scenarios are likely: either the responding husband inherently believes in the moral value of adult children providing old age support, or his parents (or the local community) have instilled this value in him. Either way, those believing in *Reward for Providing Old Age Support* tend to have a stronger belief in the duty of adult children in providing old age support to their parents.

3.4 Sample and Summary Statistics

As detailed in Section 2, parental matchmaking is subject to individual-level selection, and we will use local norm of parental matchmaking as an instrument for individual-level choice of matchmaking means. As a result, we need a big enough sample to compute the

norm in every province-urban-age cell where age refers to the same age as or up to three years older than the survey respondent. We thus delete any province-urban-age cells that contain fewer than 35 observations. The number of 35 is somewhat arbitrary, but it ensures a reasonable number of observations to compute the mean (excluding oneself), while at the same time not losing too many observations of the sample. This restriction leads to a sample with males no older than early 50s at the time of survey (1990). Dropping old males has an added benefit: the individuals that remain in our sample do need to consider old age support for their parents, which suits the purpose of this paper well. In total, we have 6,334 husbands in the analysis sample, 57.6% of which lived in rural areas at the time of survey.

Table 1 presents the summary statistics for the pooled sample first and then urban and rural separately. Overall, 33.8% of couples were formed via parental matchmaking, but rural couples went through that route much more frequently (48% vs. 14.5%). Relative to rural couples, urban couples tend to view their marriages slightly more harmonious, and earn higher income. Urban husbands have 3.4 more years of schooling than their rural counterparts, partly because their parents were more educated and partly because the returns to skills are higher at urban areas. Urban husbands are also more likely to be a Communist Party member (34.4% versus 10.2%). Rural wives tend to be much less educated (e.g., by almost 5 years), and earn less annual income than urban wives. Consistent with our earlier discussion, rural wives tend to be more submissive or traditional: their score on *Wife Submissiveness* is 0.6 standard deviation higher than urban wives, as they are more likely to consent to *Wife Career Unimportant* (25% vs 9%), *No Good Male Friend* (49% vs. 25%), and *Cannot Reject Sex* (53% vs. 38%).

Parent-matched couples are different from self-matched couples as well. Table 2 shows that, relative to self-matched couples, parent-matched ones are less harmonious, more likely to have conflicts, and have lower combined income (by 80 log points). Husbands in parent-matched marriages have significantly lower schooling (by 1.6 years), significantly less educated parents (by 1-2 years), and are slightly less likely to be a Communist Party member, which is associated with higher earning power (Li et al. 2007). They also tend to have on average 0.4 more children. Wives in parent-matched marriages have 2.4 fewer years of education, and 43 log points less annual income. Parent-matched wives are more likely to be submissive than self-matched wives by 1/3 standard deviation. These significant differences between self- and parent-matched couples suggest serious selection of parental matchmaking by individual characteristics. That being said, parental matchmaking is associated with a few market- or township-level variables as well. Parent-matched marriages are more likely to appear in places where the norm of parental matchmaking is higher, the average income is lower, and the average schooling is lower. Given the rigid hukou system in China and

lack of migration in 1990, these geographic differences are likely beyond the control of any individual in our sample.

Using the husband sample, Table 3 shows a linear-probability estimation on the determinants of parental matchmaking.¹⁵ In column (1) we do not, and in column (2), we do, control for religion and ethnicity dummies. Rural male was much more likely to be parent-matched (by 15 to 18 percentage points). The older the husband was at the time of the survey, the more likely that his marriage was via parental matchmaking. This suggests that parental matchmaking was strongly related to the era that he lives. Interestingly, relative to atheists, Muslim male and Buddhist male tend to rely more on parental matchmaking. Some ethnic groups such as Koreans and Manchurians tend to use parental matchmaking to a greater extent. Consistent with our summary statistics, the reliance on parental matchmaking is significantly lower when the district or township that he lives in is richer, and when the local average schooling is higher.

4 Empirical Results

4.1 Effect on Love and Joint Income

We first examine how parental matchmaking relates to marital harmony and joint couple income. To isolate the effects of parental matchmaking, we include a long list of control variables: (1) the husband's own age (in log) and schooling;¹⁶ (2) the schooling levels for his father and his mother; (3) his political affiliation with the communist party; (4) his religion dummies (Muslim, Christian, Buddhist) and ethnicity dummies (Hui, Korean, Manchu, or other minorities); (5) local development as measured by the average income level and the average schooling level in the district or township that the couple lives in.¹⁷ Since rural and urban regions differ greatly in marriage markets – historically and culturally rural and urban residents rarely mixed up in marriage – and their residents also differ greatly in social security, in all regressions we allow parental matchmaking to have distinct effects in rural areas. A rural dummy is also included as a control variable.

Our key right hand side variable is parental matchmaking. As detailed in Section 2, a more competent son will conduct the mate search himself, and conditional on child attributes, more competent parents are more likely to search for their sons. This is why we control for

¹⁵Similar results are found when relying on probit.

¹⁶We got very similar results when including age and age squared instead.

¹⁷The average income and schooling are computed based on sample information. We exclude the self in computing the local average to avoid artificial correlation of these variables and the outcomes of an individual.

We have also tried including other variables such as the ownership dummies of the husband's first job. Their inclusion did not affect any of our key results.

both child and parent characteristics in the regression. Nevertheless, selection based on unobservable individual characteristics is still likely.

To deal with such individual-level selections, we use local norm of parental matchmaking as the instrumental variable for one's own matchmaking choice. The social norm of parental matchmaking is constructed as the share of males getting married via parental matchmaking in the same province-urban cell with the same age or being older by up to three years.¹⁸ We have tried alternative measures of social norms such as relying on the sample of the same age only, or the sample of respondents that of the same age or older no more than one (two) year and so on. The results are qualitatively similar. If a region has a stronger norm of parental involvement in their children's spousal selection, parents have a larger network of potential marriage partners for their sons. This would alter their search benefits and costs, thus directly affecting individual-level reliance on parental matchmaking. On the other hand, after controlling for the son's characteristics and family background, it is unlikely that the local social norm would directly affect marriage outcomes. To the extent that matchmaking norm is correlated with unobserved local culture and tradition that cannot be explained by average income or schooling differences across townships, such variations in local culture and tradition are absorbed in matchmaking norm, and the effect of parent matchmaking should be viewed as those induced by local parent matchmaking norms *and* related culture and tradition. Given the likely prevalence of individual-level selection in parental matchmaking, we shall mainly rely on the instrumental variable regression results below.

Our baseline results are contained in Table 4. In the first 3 columns, we report the results for *Harmony*. Column (1) reports the OLS result with a base set of controls; column (2) adds religion and ethnic dummies; column (3) is the 2SLS result corresponding to column (2). The next three columns repeat the same structure with the dependent variable being the logarithm of joint couple income. All standard errors are White-corrected and clustered at the district / township level since we have local income and schooling controls at this level. First-stage Cragg-Donald Wald F statistics and Kleibergen-Paap Weak Rank F statistics are reported at the bottom of Columns (3) and (6). The complete first-stage regressions are reported in Appendix B.

Parental matchmaking is robustly correlated with lower marital harmony. The coefficient of *Parent Matched* is consistently negative and significant from the two OLS regressions, with no significant difference between urban and rural areas. The instrumental variable estimate is again negative, more pronounced in magnitude, and statistically significant. According to the 2SLS estimate, increasing *Parent Matched* by one standard deviation (0.47) would lead

¹⁸In computing the average, we exclude the self to avoid artificial correlation between the instrument and the endogenous variable.

to a drop in *Harmony* by 1.12 standard deviation. The results are consistent with the agency model where parents' emphasis on sharable marriage production tend to lead to a sacrifice in non-sharable outcomes such as marital harmony.

On joint couple income, the 2SLS results suggest that parental matchmaking has a positive effect in urban areas but a negative effect in rural areas. In the two OLS specifications, *Parent Matched* is not significantly correlated with couple income, probably because the adverse selection of sons and the positive selection of parents go against each other on factors that may affect joint couple income. Indeed, once instrumented, the effect of *Parent Matched* becomes significant in both rural and urban areas. For urban areas, an increase in *Parent Matched* by one standard deviation would lead to an increase in couple income by 0.2 standard deviations. For rural areas, the corresponding effect is a drop in couple income by 0.3 standard deviations.

The contrasting effects on joint income in urban and rural areas likely reflect different patterns of old age support and different institutional constraints. First, in urban areas, market opportunities are more abundant (both for labor and for services such as meals, laundry and care-giving), yet the enforcement of the one-child policy is more stringent, both factors contributing to urban couples relying more on monetary income (relative to household production) to deliver old age support. As a consequence, parents in their self interest to ensure old age support also have strong interest to ensure that the family structure would yield relatively high income. Thus, the effect of parental matchmaking on joint couple income tend to be positive in urban areas. In contrast, in rural areas, there are much fewer opportunities to make money and buy services; but there are more opportunities to evade the one-child policy. Thus parents have to rely more on household production to ensure the delivery of old age support. We thus witness a substitution of market production by household production in rural areas, which explains why the effect of parental matchmaking on (market) couple income is negative in rural areas. These conjectures also imply that urban and rural parents might pick wives of different skills and traits.

4.2 Effects on Wife's Schooling, Income and Submissiveness

As rural couples rely more on household production for the delivery of old age support than urban couples, and wives tend to play the role of caregivers in traditional Chinese families, we expect that rural parents, upon the opportunity to act as matchmaker for their sons, would have strong incentives to pick potential wives who would specialize in household production. For smooth delivery of household production, the rural parents would pick daughter-in-laws that are submissive. While rural parents likely would prefer daughter-in-laws that are both

submissive and well-educated, such a combination is rare or infeasible. Rural parents therefore have to settle for submissiveness at the expense of lower education. We thus expect matchmaking rural parents end up picking daughter-in-laws with lower educational levels but higher submissiveness. In contrast, urban reliance on market income (along with some household care) and the ample payoff for skills in urban areas (including in household productions) imply that urban matchmaking parents are less willing to get more submissiveness at the expense of education. These parents therefore do not necessarily pick higher or lower levels of schooling of the wife for the son than the son would have picked by himself.

This conjecture is confirmed by the left panel of Table 5. According to the 2SLS estimate, the effect of *Parent Matched* is insignificant in urban areas, but negative and significant for rural areas. The rural effect is quite large: relative to self-matched marriages, one standard deviation increase in parental matchmaking in rural areas feature wives with 1.04 standard deviation less schooling.

Note that higher wife schooling does not necessarily translate into higher earnings from the wife. In fact, as shown in the right panel of Table 5, parent-matched marriages are associated with significantly lower wife earnings in both urban and rural areas, before and after we control for unobserved individual-level selection by instrumental variable. One explanation is that wives in parents-matched marriages tend to specialize more in household production. This is consistent with parents' interest in obtaining more household care.

To check whether parental matchmaking favors a submissive wife, which we presume to be a key condition for delivering old age support in traditional societies, Table 6 reports regression results first on the aggregate measure of *Wife Submissiveness*, and then on the three specific measures separately. The correlation of *Parent Matched* with *Wife Submissiveness* is robustly positive, and the correlation is not significantly different between rural and urban areas. After instrumenting *Parent Matched*, the effect becomes statistically significant and larger in magnitude.

The rest of Table 8 further relates *Parent Matched* to *Woman Career Not Important*, *No Good Male Friend*, and *Cannot Reject Sex*. While urban wives in parent-matched marriages do not differ from other marriages in terms of downgrading the importance of women's careers, parent-matched rural wives tend to emphasize significantly less on women's careers. Again, this is consistent with endogenous preference (Becker, 1996): in urban areas where market opportunities are greater for women, less career discouragement is imposed on women; in rural areas where market opportunities are less for women but old age support is primarily dependent on within-household services, parents discourage women's market value more.

Turning to *No Good Male Friend*, both rural and urban wives under parent-matched marriages believe more than self-matched wives in that a married woman should not have

good male friends, as compared to the self-matched wives. This attitude/preference is consistent with more marriage stability and more attention to household production. After all, outside friendship with the opposite sex could lead to more time spent outside the household or emotional distraction, both of which may destabilize marriage and invalidate the investments that parents have already made in finding the suitable mates for their sons.

Finally, the last panel of Table 6 shows that wives under parent-matched marriages tend to believe that wives should not reject sex requests by their husbands. Again, this is consistent with the notion that parents-matched wives are more submissive and respect more the traditional patriarchal value. Overall, Table 6 renders a strong support to the argument that relative to wives under self-matched marriages, those under parent-matched marriages tend to be more submissive and more suitable in providing old age support within the household.

4.3 Husband's Belief in Old Age Support and the Number of Children

Becker, Murphy and Spenkuch (2015) suggest that parents in need of old age support have incentives to induce more altruistic preference from their sons, in order to ensure smooth and committed delivery of old age support. To check this argument, we examine how husband belief in old age support differs under parent- and self-matched marriages.

In the OLS results of Table 7, *Parent Matched* is positively correlated with *Reward for Providing Old Age Support* (i.e., a belief that old age support should be rewarded), but not statistically significant. When we use the instrument, the coefficient becomes statistically significant and of similar magnitude in urban and rural areas. According to the 2SLS results, a one-standard-deviation increase in *Parent Matched* (0.47) is associated with a higher probability of parent-matched husbands to agree to *Reward for Providing Old Age Support* by 0.8 standard deviation. This piece of evidence is consistent with Becker, Murphy and Spenkuch (2015).

Table 8 associates parental matchmaking with the number of children that the surveyed couple has. From old age support point of view, parents do not benefit directly from a greater number of grandchildren. However, altruistic parents may view more grandchildren as a warranty for their son's old age support and prefer the couple to have more children. Table 8 reports two panels of results, one on the number of children, and the other on whether the couple has three or more children. Given the imperfect enforcement of one-child policy in rural areas, it is common to have two children so the margin for parents to push is on the third child. In comparison, three or more children is much less likely in urban (6.3%) than in rural areas (23.5%). This difference is reflected in both OLS and 2SLS results. After

controlling for individual-level selection by instrumental variable, urban couples are even less likely to have three or more children if they were parent-matched (marginally significant at 10%), but rural couples are much more likely to have three or more children under parental matchmaking (significant at 1%). This is consistent with the argument that since rural households have little access to state-provided pension and health insurance, they have to rely heavily on children for old age support.

5 Conclusion

While many economic studies have examined various aspects of marriages, little attention has been paid to the role that parents play in their children’s marriage formation, to how various matchmaking means affect the selection of spouse and marriage outcomes, and to how institutional differences such as the provision of old age support affect the effect of matchmaking means. In this paper, we use unique data on Chinese households to examine what types of people use parental matchmaking (versus relying on self matches), and how parental matchmaking affects marriage harmony, joint income, and husband and wife traits that are conducive to the delivery of old age support.

In a simple theoretical framework, we show that parental matchmaking may distort the son’s optimal spouse selection because parents tend to emphasize a potential wife’s ability and temperament for providing sharable household goods, and downplay the love or emotional chemistry within the couple. Put differently, relative to the son, parents are more willing to substitute love between the couple for sharable household production. We further interpret this model in light of parental need for old age support, following BMS (2015).

We find supporting evidence for the model: parental involvement is negatively associated with marital harmony; in comparison, it is associated with more submissive wives, who play a key role in delivering home services for elderly parents. We also find suggestive evidence that urban and rural areas use different supporting mechanisms for old age support. In urban areas, with more labor market opportunities and more stringent enforcement of the one-child policy, parents rely more on the monetary income channel for ensuring old age support, and as a result, parental matchmaking is associated with higher joint couple income. In contrast, in rural areas, labor market opportunities are fewer and it is easier to evade the one-child policies. As a result, parents rely more on household production for ensuring old age support, and rural wives are found to have lower schooling but be more submissive under parental matchmaking than under self match. Joint income is also lower for parent matched couples than for self-matched couples in rural areas. These rural-urban contrasts in behavior, along with the finding that sons and daughters-in-law tend to have traits and beliefs that are

conducive for the delivery of old age support, render support to BMS (2015), who argue that parents systematically manipulate preferences for ensuring old age support. The result is also consistent with an insight from Cheung (1972): institutions are often evolved to serve the prevalent needs of economic players. Here, parental matchmaking is conducive to the delivery of old age support: when capital market is inefficient and old age support is privately provided, parental matchmaking is employed to ensure that parents can commit their adult son and daughter-in-law to offer old age support.

Overall, parental matchmaking introduces an interesting tradeoff. On the one hand, it entails agency costs in terms of less love within the couple. On the other hand, it helps to ensure old age support for the matchmaking parents, and a more harmonious intergenerational relationship. After our sample period, China has evolved towards more state-provided pension and health insurance for rural households and the urban poor. As more and more old age support is provided outside household, traditional values such as filial piety and submissiveness of children may become less important for parents and increasingly unproductive for the society as a whole (e.g, it may discourage risk-taking, proactive and innovative behaviors among the young). If our theory is right, we expect parental matchmaking to play different roles in this transition. After all, with more old age support from the society, parents have less need to manipulate children's preferences or select submissive but less capable (in market production) daughters-in-law. This topic warrants future research.

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Appendix A: Proof of Propositions

The optimal values of α^* and h_f^* are jointly determined by (1) and (2). Note that α^* can be solved from condition (1) as a function of h_f^* , which can then be plugged in (2) to solve h_f^* . The optimal values of α^{**} and h_f^{**} are jointly determined by (3) and (4), based on which we get $\partial\alpha^{**}/\partial h_p > 0$ and $\partial h_f^{**}/\partial h_p > 0$ by Cramer's rule:

$$\frac{\partial\alpha^{**}}{\partial h_p} = \begin{vmatrix} \overset{(-)}{\eta_p s_{13}} & \overset{(+)}{\delta f_1 - \eta_p s_{12}} \\ \overset{(-)}{\eta_p s_{23}} & \underset{(-)}{[\gamma + \delta(\beta + \alpha^{**})]f_{11} - \eta_p s_{22}} \end{vmatrix} / |H| > 0,$$

$$\frac{\partial h_f^{**}}{\partial h_p} = \begin{vmatrix} \overset{(-)}{-\eta_p s_{11}} & \overset{(-)}{\eta_p s_{13}} \\ \overset{(+)}{\delta f_1 - \eta_p s_{12}} & \underset{(-)}{\eta_p s_{23}} \end{vmatrix} / |H| > 0,$$

where $|H|$ is the determinant of Hessian matrix

$$|H| = \begin{vmatrix} \overset{(-)}{-\eta_p s_{11}} & \overset{(+)}{\delta f_1 - \eta_p s_{12}} \\ \overset{(+)}{\delta f_1 - \eta_p s_{12}} & \underset{(-)}{[\gamma + \delta(\beta + \alpha^{**})]f_{11} - \eta_p s_{22}} \end{vmatrix},$$

and $|H| > 0$ is assumed for the existence of optimal solutions. We can also get $\partial\alpha^{**}/\partial\gamma > 0$ and $\partial h_f^{**}/\partial\gamma$ in a similar way. We assume $\delta f_1 - \eta_p s_{12} \geq 0$, which essentially means that

$\partial^2 \tilde{U} / \partial \alpha \partial h_f \geq 0$; and then based on (3) we have

$$\frac{\partial \alpha^{**}}{\partial h_f} = \frac{\delta f_1(h_f^*, h_m) - \eta_p s_{12}(\alpha^*, h_f^*, h_m)}{s_{11}} > 0.$$

Comparing conditions (1) and (3), we can see that $\alpha^*(h_f) > \alpha^{**}(h_f)$ must hold, conditional on the same level of h_f ; the reason is that the first terms in both conditions are independent of α while the second terms are strictly increasing in it, which combined with the assumption $\eta_p s_1 \geq \delta \eta_m c_1$ will lead to $\alpha^*(h_f) > \alpha^{**}(h_f)$. Given the same α , we may have $h_f^* > h_f^{**}$ if $\gamma < (1 - \delta)(\beta + \alpha)$ and/or $\eta_m c_2 \leq \eta_p s_2$, in other words, if parents do not benefit too much from the daughter-in-law's human capital h_f or if their marginal searching cost with respect to h_f is not lower than the son's. The opposite result $h_f^* \leq h_f^{**}$ is otherwise possible.

Since the searching cost is always positive,

$$(\beta + \alpha^*)f(h_f^*, h_m) > (\beta + \alpha^{**})f(h_f^{**}, h_m) \quad (6)$$

must hold, which then implies $\alpha^* > \alpha^{**}$ and $\alpha^* f(h_f^*, h_m) > \alpha^{**} f(h_f^{**}, h_m)$; the reason is as follows. (i) If $h_f^* > h_f^{**}$, then $\alpha^*(h_f^*) > \alpha^{**}(h_f^*) > \alpha^{**}(h_f^{**})$ holds, and it implies $\alpha^* > \alpha^{**}$, where the first inequality follows $\alpha^*(h_f) > \alpha^{**}(h_f)$ and the second follows $\partial \alpha^{**}(h_f) / \partial h_f > 0$. And $\alpha^* f(h_f^*, h_m) > \alpha^{**} f(h_f^{**}, h_m)$ follows directly from $h_f^* > h_f^{**}$ and $\alpha^* > \alpha^{**}$. (ii) If $h_f^* \leq h_f^{**}$, then we have

$$(\beta + \alpha^*)f(h_f^{**}, h_m) \geq (\beta + \alpha^*)f(h_f^*, h_m) > (\beta + \alpha^{**})f(h_f^{**}, h_m),$$

where the first and third terms imply $\alpha^* > \alpha^{**}$; the first inequality holds because $h_f^* \leq h_f^{**}$, while the second inequality is based on (6). And following similar arguments we can derive $\alpha^* f(h_f^*, h_m) > \alpha^{**} f(h_f^{**}, h_m)$ by comparing the first and third terms in

$$\beta f(h_f^{**}, h_m) + \alpha^* f(h_f^*, h_m) \geq (\beta + \alpha^*)f(h_f^*, h_m) > (\beta + \alpha^{**})f(h_f^{**}, h_m).$$

Based on (5), the utility difference between self and parents' searching is

$$\pi \equiv U^* - U^{**} = (\beta + \alpha^*)f(h_f^*, h_m) - \eta_m c(\alpha^*, h_f^*, h_m) - (\beta + \alpha^{**})f(h_f^{**}, h_m),$$

which is strictly decreasing in h_p because

$$\partial\pi/\partial h_p = -f(h_f^{**}, h_m)\partial\alpha^{**}/\partial h_p - (\beta + \alpha^{**})f_1(h_f^{**}, h_m)\partial h_f^{**}/\partial h_p < 0.$$

We get $\partial\pi/\partial h_m > 0$ for the following reason. Note that

$$\partial\pi/\partial h_m = \frac{\partial U^*}{\partial h_m} - \partial(\beta + \alpha^{**})f(h_f^{**}, h_m)/\partial h_m,$$

where

$$\frac{\partial U^*}{\partial h_m} = \frac{\partial(\beta + \alpha^*)f(h_f^*, h_m)}{\partial h_m} - \frac{\partial\eta_m c(\alpha^*, h_f^*, h_m)}{\partial h_m} \quad (7)$$

$$= (\beta + \alpha^*)f_2(h_f^*, h_m) - \eta_m c_{31}(\alpha^*, h_f^*, h_m) > 0 \quad (8)$$

by the Envelop Theorem. Since

$$\frac{\partial^2 U^*}{\partial h_m \partial \alpha} = \alpha^* f_2(h_f^*, h_m) - \eta_m c_{31}(\alpha^*, h_f^*, h_m) > 0,$$

we have

$$\frac{\partial U^*}{\partial h_m}|_{(\alpha^*, h_f^*)} > \frac{\partial U^*}{\partial h_m}|_{(\alpha^{**}, h_f^*)} > \partial(\beta + \alpha^{**})f(h_f^*, h_m)/\partial h_m, \quad (9)$$

where the first inequality is because $\alpha^* > \alpha^{**}$, and the second inequality is because the second term of $\frac{\partial U^*}{\partial h_m}$ in (8) is positive. (i) If $h_f^* > h_f^{**}$, then $\partial^2(\beta + \alpha)f(h_f, h_m)/\partial h_m \partial h_f = f_{12}(h_f, h_m) > 0$ implies

$$\partial(\beta + \alpha^{**})f(h_f^*, h_m)/\partial h_m > \partial(\beta + \alpha^{**})f(h_f^{**}, h_m)/\partial h_m,$$

which combined with the inequality in (9) implies

$$\frac{\partial U^*}{\partial h_m}|_{(\alpha^*, h_f^*)} > \partial(\beta + \alpha^{**})f(h_f^{**}, h_m)/\partial h_m,$$

and this leads to

$$\partial\pi/\partial h_m = \frac{\partial U^*}{\partial h_m}$$

(ii) When $h_f^* \leq h_f^{**}$ is the case, the result can be derived in a similar way due to

$$\frac{\partial(\beta + \alpha^{**})f(h_f^{**}, h_m)}{\partial h_m} < \frac{\partial(\beta + \alpha^*)f(h_f^{**}, h_m)}{\partial h_m} - \frac{\partial\eta_m c(\alpha^*, h_f^*, h_m)}{\partial h_m} < \frac{\partial U^*}{\partial h_m}|_{(\alpha^*, h_f^*)},$$

where the first inequality holds because of $\alpha^{**} < \alpha^*$ and $-\partial\eta_m c(\alpha^*, h_f^*, h_m)/\partial h_m > 0$, while the second inequality holds because (α^*, h_f^*) is the optimal choice to maximize U^* than (α^*, h_f^{**}) ; comparing the first and the third terms we get $\partial\pi/\partial h_m > 0$.

So the threshold $h_p^\#$ is uniquely determined by

$$\pi = (\beta + \alpha^*)f(h_f^*, h_m) - \eta_m c(\alpha^*, h_f^*, h_m) - (\beta + \alpha^{**}(h_p^\#))f(h_f^{**}(h_p^\#), h_m) = 0.$$

Based on this identity, we get

$$\begin{aligned} \frac{\partial h_p^\#}{\partial h_m} &= -\frac{\partial\pi/\partial h_m}{\partial\pi/\partial h_p} > 0, \\ \frac{\partial h_p^\#}{\partial\gamma} &= -\frac{\partial\pi/\partial\gamma}{\partial\pi/\partial h_p} = -\frac{f(h_f^{**}, h_m)\partial\alpha^{**}/\partial\gamma + (\beta + \alpha^{**})f_1(h_f^{**}, h_m)\partial h_f^{**}/\partial\gamma}{-\partial\pi/\partial h_p} < 0, \\ \frac{\partial h_p^\#}{\partial\eta_m} &= -\frac{\partial\pi/\partial\eta_m}{\partial\pi/\partial h_p} = \frac{-c(\alpha^*, h_f^*, h_m)}{-\partial\pi/\partial h_p} < 0, \end{aligned}$$

The comparative statics for the threshold level $h_m^\#$ can be derived in a similar manner.

Figure 1: Theoretical Predication on the Son's Optimal Choice of Matchmaking Method

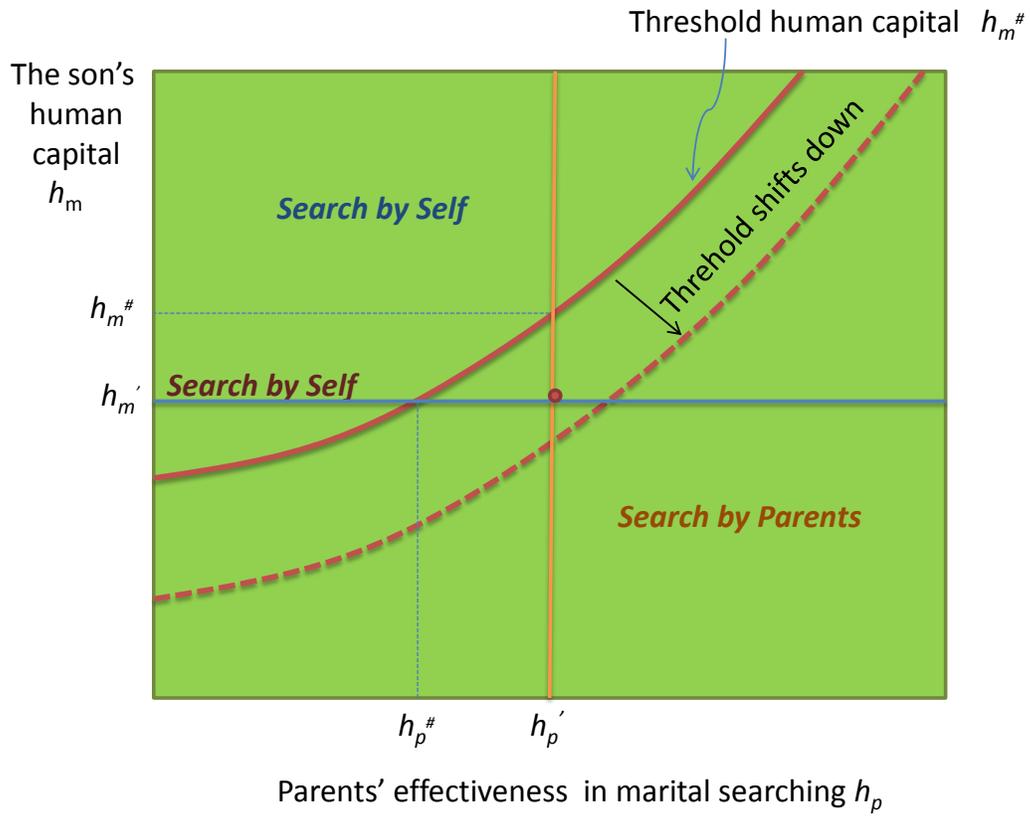


Table 1. Summary Statistics

	Pooled		Urban		Rural	
	mean	sd	mean	sd	mean	sd
Rural	0.576	0.494	0.000	0.000	1.000	0.000
Harmony	1.015	0.715	1.033	0.724	1.000	0.708
No conflicts	0.253	0.435	0.274	0.446	0.237	0.426
Ln(couple annual income)	8.752	1.195	9.860	0.795	7.937	0.668
Parent Matched	0.338	0.473	0.145	0.352	0.480	0.500
Parent Matched norm	0.351	0.188	0.155	0.053	0.495	0.100
<u>Township Characteristics^a</u>						
Ln(avg individual income at township level)	8.151	1.075	9.226	0.720	7.361	0.387
Average years of schooling at township level	7.812	2.371	10.288	0.941	5.993	1.134
<u>Husband Characteristics</u>						
Age	34.892	6.291	36.539	6.071	33.682	6.174
Schooling	8.718	3.218	10.657	2.754	7.293	2.757
Mother schooling	2.196	3.163	3.678	3.714	1.108	2.103
Father schooling	4.310	3.719	6.184	3.808	2.933	2.977
Communist Party member	0.204	0.403	0.344	0.475	0.102	0.302
<u>Couple outcomes</u>						
Number of children	1.646	1.025	1.275	0.915	1.918	1.016
Three or more children	0.162	0.369	0.063	0.244	0.235	0.424
Reward for providing old age support	0.447	0.497	0.506	0.500	0.405	0.491
<u>Wife traits</u>						
Schooling	7.350	3.859	10.067	2.540	5.353	3.418
Ln(wife annual income)	7.223	0.821	7.742	0.418	6.846	0.836
Wife submissiveness	1.036	0.882	0.721	0.760	1.271	0.893
Wife career unimportant	0.184	0.387	0.089	0.285	0.253	0.435
No good male friend	0.386	0.487	0.249	0.432	0.487	0.500
Cannot reject sex	0.469	0.499	0.382	0.486	0.534	0.499

^a The average here was computed based on sample information but excluding the individual in the computation.

Table 2. Comparison of Key Characteristics by Parent Matchmaking or Not

	Parent Matched (1)		Non-parent Matched (2)		Difference (3) = (2) - (1)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	t-stat.
Harmony	0.968	0.707	1.038	0.718	0.070	0.019	3.600
No conflicts	0.224	0.417	0.268	0.443	0.044	0.012	3.843
ln(couple income)	8.226	1.031	9.020	1.183	0.795	0.030	26.379
Parent match norm	0.450	0.163	0.300	0.179	-0.149	0.005	32.366
husband's schooling	7.677	3.153	9.249	3.120	1.572	0.083	18.903
schooling of the mother of the husband	1.445	2.559	2.580	3.367	1.134	0.083	13.701
schooling of the father of the husband	3.322	3.330	4.815	3.806	1.493	0.097	15.395
husband being a Communist Party member	0.140	0.347	0.237	0.425	0.098	0.011	9.177
number of children	1.895	1.075	1.518	0.974	-0.376	0.027	14.039
having 3 or more children	0.241	0.428	0.122	0.327	-0.118	0.010	12.237
wife's schooling	5.736	3.809	8.174	3.618	2.438	0.098	24.919
ln(wife income)	6.935	0.852	7.369	0.765	0.433	0.021	20.208
Reward providing old age support	0.446	0.497	0.448	0.497	0.003	0.013	0.195
Wife submissiveness	1.232	0.901	0.937	0.855	-0.295	0.023	12.651
Wife career unimportant	0.232	0.422	0.159	0.366	-0.073	0.010	7.103
No good male friend	0.484	0.500	0.336	0.472	-0.148	0.013	11.525
Cannot reject sex	0.517	0.500	0.445	0.497	-0.072	0.013	5.430
ln(avg township income)	7.661	0.860	8.401	1.087	0.740	0.027	27.407
avg township schooling	6.682	2.018	8.389	2.330	1.707	0.059	28.837

Table 3. Determinants of Parent Matchmaking

	Parent Matchmaking	Parent Matchmaking
Rural	0.147** (0.072)	0.180*** (0.065)
Husband characteristics		
Ln(age)	0.102*** (0.037)	0.129*** (0.040)
Schooling	-0.006 (0.004)	-0.005 (0.004)
Mother schooling	0.000 (0.003)	0.001 (0.003)
Father Schooling	-0.003 (0.002)	-0.003 (0.002)
A Communist Party Member	-0.007 (0.016)	-0.007 (0.015)
Being a muslin		0.059 (0.045)
Being a chirstian		0.022 (0.086)
Being a buddist		0.169*** (0.063)
Hui ethnicity		0.069 (0.047)
Korean ethnicity		0.228** (0.089)
Manchurian ethnicity		0.119* (0.066)
Other minority ethnicity		0.123 (0.110)
Township characteristics		
Ln(avg income per capita in the township)	-0.039* (0.021)	-0.034* (0.019)
Average schooling in the township	-0.022* (0.011)	-0.014 (0.010)
Number of observations	6,334	6,334
Adjusted R2	0.132	0.138

Table 4. Parent Matchmaking, Love, and Money

	Harmony			Log(couple joint income)		
	OLS	OLS	2SLS	OLS	OLS	2SLS
rural	0.068 (0.172)	-0.015 (0.139)	0.083 (0.244)	0.011 (0.043)	-0.007 (0.037)	0.169** (0.074)
parent matchmaker	-0.105** (0.048)	-0.095** (0.048)	-1.700** (0.784)	-0.002 (0.019)	0.001 (0.019)	0.448** (0.206)
parent matchmaker * rural	0.055 (0.060)	0.064 (0.060)	0.631 (0.787)	-0.043 (0.031)	-0.042 (0.031)	-0.865*** (0.232)
ln(age)	0.182** (0.088)	0.132* (0.080)	0.269** (0.107)	0.174*** (0.039)	0.161*** (0.038)	0.184*** (0.048)
Schooling	0.003 (0.004)	0.002 (0.004)	-0.003 (0.006)	0.023*** (0.005)	0.022*** (0.005)	0.021*** (0.004)
Mother schooling	0.001 (0.004)	0.000 (0.004)	-0.000 (0.006)	-0.000 (0.003)	-0.001 (0.003)	0.000 (0.003)
Father schooling	-0.001 (0.004)	-0.001 (0.004)	-0.003 (0.005)	0.004* (0.002)	0.004** (0.002)	0.003 (0.002)
Communist Party	0.024 (0.031)	0.023 (0.030)	0.022 (0.038)	0.083*** (0.014)	0.083*** (0.014)	0.075*** (0.015)
Ln(township income per capita)	0.051 (0.037)	0.045 (0.034)	0.014 (0.033)	0.973*** (0.010)	0.971*** (0.010)	0.956*** (0.012)
Avg township schooling	-0.008 (0.032)	-0.023 (0.023)	-0.043* (0.024)	-0.006 (0.007)	-0.010 (0.007)	-0.017** (0.008)
Religion, ethnicity dummies	No	Yes	Yes	No	Yes	Yes
Number of observations	6,050	6,050	6,050	6,334	6,334	6,334
Adjusted R2	0.005	0.015		0.845	0.846	
Cragg-Donald Wald F stat			31.6			29.8
Kleibergen-Paap Wald rk F stat			18.2			16.9

*, **, and ***: statistically significant at the 10, 5, and 1 percent level. White-corrected standard errors clustered at the township level in parentheses

Table 5. Parent Matchmaking and Wife Schooling and Earning

	Wife Schooling			Ln(Wife Income)		
	OLS	OLS	2SLS	OLS	OLS	2SLS
rural	0.447 (0.284)	0.272 (0.321)	1.944*** (0.675)	0.223 (0.253)	0.165 (0.261)	0.531 (0.389)
Parent matched	-0.374*** (0.116)	-0.360*** (0.115)	2.383 (1.717)	-0.072** (0.029)	-0.065** (0.029)	-5.517*** (1.273)
Parent Matched * Rural	-0.146 (0.155)	-0.141 (0.151)	-7.087*** (2.114)	-0.018 (0.050)	-0.017 (0.051)	2.102 (1.303)
Other controls as in column (1) of Table 5	Yes	Yes	Yes	Yes	Yes	Yes
Religion and ethnic dummies	No	Yes	Yes	No	Yes	Yes
Number of observations	6,334	6,334	6,334	6,154	6,154	6,154
Adjusted R2	0.537	0.538	0.344	0.390	0.394	-4.175
Cragg-Donald Wald F stat			29.8			22.9
Kleibergen-Paap Walk rk F stat			16.9			14.2

Note. *, **, and ***: statistically significant at the 10, 5, and 1 percent level. White-corrected standard errors clustered at the township level in parentheses.

Table 6. Parental Matchmaking and Wife Submissiveness

	Wife Submissiveness		Woman Career Not Important		No Good Male Friend		Cannot Reject Sex	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Rural	-0.215 (0.150)	-0.534* (0.304)	-0.028 (0.054)	-0.260** (0.102)	0.003 (0.085)	-0.120 (0.163)	-0.161* (0.089)	-0.123 (0.145)
Parent matched	0.061 (0.037)	2.509*** (0.733)	0.028 (0.018)	0.071 (0.185)	0.035 (0.024)	1.478*** (0.460)	-0.002 (0.023)	0.925** (0.402)
Parent matched * rural	0.002 (0.055)	-0.456 (0.847)	-0.028 (0.028)	0.693*** (0.235)	0.021 (0.034)	-0.430 (0.512)	0.005 (0.029)	-0.665 (0.426)
Other controls as in column (1) of Table 5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religion and ethnic dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N obs.	6,256	6,256	6,334	6,334	6,298	6,298	6,268	6,268
Adjusted R2	0.133	-0.984	0.055	-0.493	0.083	-0.959	0.040	-0.178
Cragg-Donald Wald F stat		28.1		29.8		28.9		27.9
Kleibergen-Paap Walk rk F stat		16.2		16.9		16.1		16.3

Note. *, **, and ***: statistically significant at the 10, 5, and 1 percent level. White-corrected standard errors clustered at the township level in parentheses.

Table 7. Parent Matchmaking and Reward for Providing Old Age Support

	Reward for providing old age support		
	OLS	OLS	2SLS
rural	0.061 (0.089)	0.072 (0.085)	-0.057 (0.140)
Parent matched	0.022 (0.028)	0.020 (0.029)	0.848** (0.418)
Parent matched * rural	0.037 (0.035)	0.032 (0.035)	-0.028 (0.451)
Other controls as in column (1) of Table 5	Yes	Yes	Yes
Religion and ethnic dummies	No	Yes	Yes
Number of observations	6,300	6,300	6,300
Adjusted R2	0.020	0.024	-0.456
Cragg-Donald Wald F stat			37.9
Kleibergen-Paap Wald rk F stat			18.2

Note. *, **, and ***: statistically significant at the 10, 5, and 1 percent level. White-corrected standard errors clustered at the township level in parentheses.

Table 8. Parent Matchmaking and Number of Children

	The number of children			Dummy =1 if three or more children		
	OLS	OLS	2SLS	OLS	OLS	2SLS
rural	0.750** (0.347)	0.856** (0.345)	-0.497 (0.556)	-0.012 (0.103)	0.032 (0.089)	-0.535*** (0.175)
parent matched	0.009 (0.047)	-0.001 (0.045)	2.373 (2.154)	-0.009 (0.013)	-0.013 (0.013)	-1.323* (0.770)
parent matched * rural	0.188*** (0.065)	0.184*** (0.062)	3.150 (2.164)	0.080*** (0.022)	0.080*** (0.021)	2.655*** (0.785)
Other controls as in column (1) of Table 5	Yes	Yes	Yes	Yes	Yes	Yes
Religion and ethnic dummies	No	Yes	Yes	No	Yes	Yes
Number of observations	6,334	6,334	6,334	6,334	6,334	6,334
Adjusted R2	0.299	0.305	-3.797	0.120	0.127	-2.200
Cragg-Donald Wald F stat	29.8			29.8		
Kleibergen-Paap Wald rk F stat	16.9			16.9		

Note. *, **, and ***: statistically significant at the 10, 5, and 1 percent level. White-corrected standard errors clustered at the township level in parentheses.

Appendix B: The first stage regressions

	Parent matchmaking	Parent matchmaking * rural
	coef/se	coef/se
Parent Matchmaking Norm	0.673*** (0.145)	-0.054 (0.078)
Parent Matchmaking Norm * rural	-0.055 (0.173)	0.694*** (0.122)
rural	0.034 (0.082)	0.050 (0.078)
ln(husband's age)	0.037 (0.042)	0.035 (0.039)
ln(husband schooling)	-0.005 (0.004)	-0.004 (0.004)
husband's mother's schooling	0.001 (0.003)	0.000 (0.002)
husband's father's schooling	-0.003 (0.002)	-0.002 (0.002)
husband being a communist party member	-0.018 (0.015)	-0.018 (0.012)
ln(avg township income)	-0.018 (0.017)	-0.019 (0.014)
avg township schooling	-0.008 (0.011)	-0.010 (0.011)
religion & ethnicity dummies	yes	yes
F-stat for excluded Ivs	13.300	18.700
Number of observations	6,334	6,334
Adjusted R2	0.147	0.305