

Catalyzing Household Well-being through Women's Property Rights Improvements*

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Abstract

This paper investigates how enhancing women's property rights can improve the welfare of both spouses. It examines the effects of a change in marriage law that protects wives' property rights in the event of a divorce. This paper develops a model of a unique marriage institution prevalent in China. The bride's family sets a bride price, then gives a dowry to the new couple. The couple shares their income and the dowry unless they divorce. In the model, the groom's family gains directly from the marriage since, in China, couples typically relocate near the groom's family. Both sets of parents are altruistic towards their children. The study derives equilibrium prices for marriage payments. It shows that increasing the wife's property rights leads to a Pareto improvement if the bride price increases. Using a regression discontinuity design, I show that the law encourages larger dowries and bride prices and thus financially benefits both the husband and wife.

Key words

Gender Inequality, Marriage Payments, Divorce, Property Rights

JEL Classification codes

J12, D13, J16, D15

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1. Introduction

This paper investigates how enhancing women's property rights can improve the welfare of both spouses and families on both sides. This question is answered in the context of a unique marriage institution prevalent in China that involves bidirectional payments of both a bride price—a payment from the groom's family to the bride's family—and a dowry—a wealth transfer from the bride's family to the bride. This paper begins by modeling the traditional practice in which the bride's family sets the bride price and transfers the dowry to the newly married couple, who then divide their resources. It then explores the implications of a marriage law amendment that allows a wife to secure her property after a divorce. I prove, both theoretically and empirically, this law encourages larger dowries and financially benefits both the husband and wife, as demonstrated by the positive effect on the bride price as well as the dowry.

The marriage payment custom is performed as follows: After the betrothal and before the wedding, the bride's family signals to the groom's family how much they want as the bride price. A bride price is traditionally regarded as compensation for the bride's family owing to the common patrilineal tradition. This is typically a "take-it-or-leave-it" offer, and the groom's family usually does not negotiate the price with the bride's family. If the groom's family chooses to pay the bride price to the bride's parents, the bride's parents will transfer part of their wealth to their daughter and let her bring it to the new family as her dowry. The role of dowries is usually interpreted as parents' altruism toward their daughters; higher dowries signify a wish for better post-wedding life for the daughters. The flowchart below shows the process:

[Insert Figure 1 here]

In 2001, a marriage law amendment was introduced in response to the changing societal landscape and increasing divorce rates. This amendment, widely viewed as pro-woman, clarifies ownership rights of pre-marital property and provides spouses with greater flexibility in claiming post-wedding property. In the event of a divorce, a spouse can retain their own property. Section 2.2 provides additional details regarding the amendment. Given that dowries typically comprise physical assets and become part of the couple's budget, this amendment grants wives an advantage in the event of a divorce.

I explore how the increased value of dowries impact the equilibrium prices for the two marriage

payment and the resulting impact on the welfare of both spouses and their families. Given the substantial amount of wealth transferred during marriages (e.g., a survey conducted in rural China in 2010 indicates that, on average, it costs a family's 10-year savings to marry in a bride (Jiang et al., 2015).), any changes in marriage payments can have significant effects on the budget and well-being of the parties involved. The marriage law amendment directly addresses uncertainty in property ownership for the bride's family, which, in turn, raises the value of dowries. As a result, opposing "income" and "substitution" effects will influence the willingness to pay for a dowry, subsequently affecting the bride price sought by the bride's family. I discuss various scenarios where these prices may change and demonstrate that when both prices increase, it results in a Pareto improvement.

The first distinctive feature of this paper is the modeling of the unique institution. The cohesion of the two prices and the wealth transfer behaviors of the families on both sides lead to the question of optimal choice and deciding the welfare of the spouses. Bride prices and dowries have been prevalent in many societies throughout history, especially where the social status of women is lower (Anderson, 2003). Currently, these traditions remain popular in many developing countries, notably those in East and South Asia and Sub-Saharan Africa (Anderson, 2007). Typically, a society only sees a single direction of the payments (i.e., either the bride price from the groom's side to the bride's side or the dowry from the bride's side to the groom's side); the direction heavily depends on the historical female role in agricultural activity (Botticini & Siow, 2003; Corno et al., 2020). Nevertheless, Greater China appears to be the only large society that sees both the bride price and dowry in marriages (Anderson, 2007; Brown, 2009).¹ Existing literature explains the occurrence and roles of marriage payments from different perspectives. Becker (1991) attributes them to the inflexibility in the division of joint products within a marriage. An upfront payment would arise to compensate for the loss of efficiency in the production of one side due to marriage. Anthropological explanations claim that these payments function as a kind of property relations within a society (e.g., Goody (1973) and Schlegel & Eloul (1988)), where bride prices develop in societies with a lack of social stratification, and dowries are connected with social stratification.² However, the presumptions of both theories constrain wealth transfers as unidirectional and zero-sum. Thus, there have been limitations in discussing the scenario

¹Muslim communities in the Indian Subcontinent traditionally require a payment from the groom to the bride called a *mahr*. However, under the rule of the British Raj, dowries also became very popular. Nevertheless, a *mahr* serves a different religious purpose and should not be treated the same as a bride price.

²The social stratification defined in their work is mainly associated with the economic status of women, where strong social stratification restricts women from economic activities outside of domestic work.

of bidirectional transfers.

In order to understand the cohesion and the effect of the marriage law amendment, I propose a novel three-agent marriage market model to describe this unique institution. The model takes two main factors into account: patrilocality and parents' altruism. [Botticini & Siow \(2003\)](#) attributes the occurrence of dowries to the same two factors and refers to dowries as "pre-mortem inheritance" but does not consider their coexistence with bride prices. I complement their theory by allowing the possibility of bride prices to coexist with dowries. Unlike the cases discussed in [Botticini & Siow \(2003\)](#), China sees a high labor force participation rate among women.³ This leads to a necessity of compensation for the loss of services born by the bride's family.

The parents' utility is altruistic and consists of three parts: the utility of their own consumption, the weighted utility of their children's consumption, and the loss or gain of value due to their children's marriage. Considering the prevalence of patrilocality in marriages in China, the departure of their daughter induces a loss of utility for the bride's family, while the groom's family sees a positive gain.

For the new conjugal household, the utility is in a collective form and comprises the weighted utilities of the husband and the wife, with the sum of the weights (bargaining power) being one. The heterogeneity of the bargaining power is introduced by incorporating the dowry payment into the Pareto weights on individuals. Existing literature documents that the wife's bargaining power is always lower than .5 (e.g., [Del Boca & Flinn \(2012\)](#) and [Lise & Yamada \(2019\)](#)). Thus, a higher dowry payment can potentially increase the wife's bargaining power, bringing it closer to an even point.

The marriage payment prices are based on a maximization problem for the bride's family. Because a dowry is given after the bride price is received, the bride's family has to decide the amount of the dowry given any bride price and the consequent bride price amount to maximize their utility. In addition, the maximization process has constraints from both sides in terms of marriage decisions: the two marital transfers should satisfy the condition that their children getting married is better than any outside option for both sets of parents.

I prove that, under reasonable parameter values, bride prices and dowries can coexist in equilibrium. Moreover, a negative or zero "bride price" (a wealth transfer from the bride's to the groom's

³This was also true in ancient China due to women having advantages over men in some main agricultural activities such as tea picking, silk farming, and textile production.

family) can never happen, as in that case, marriage is not sufficiently attractive to the bride's family. On the other hand, a positive bride price but no dowry can occur if the bride's family is relatively poor. This pattern is factually observed in the data, even if less common. The economic explanation lies in the two key assumptions of the model—patrilocality and altruism—derived from the historical background, even though modern marital transfers mostly do not rely on gender roles in agricultural activities.

I assess the policy implication of a pro-woman marriage law amendment by examining how an external shock on the value of dowries changes the willingness to pay for the two families. The marriage law amendment could lead to two incentives for the bride's family. On the one hand, the external shock increases the value of the dowry, which lessens the need for the dowry to achieve the same level of bargaining power for the bride. On the other hand, the increasing marginal benefit of a dowry provides the bride's family a higher incentive to transfer more wealth. A more interesting outcome occurs when the second effect dominates since it leads to increases in both the bride price and dowry and the consequential Pareto improvement in society with a high level of inequality.

This paper is not the first one to test the application of a Paretian scheme as raised in the early literature on welfare economics such as [Hicks \(1939\)](#), in which a policy targets to benefit the disadvantaged side can achieve a welfare improvement without damaging the satisfactions of other parties. However, to the best of my knowledge, this paper is the first to examine this implication at the household level. The closest case is the bargaining between landlords and tenants in sharecropping. Ample literature suggests that improved tenants' property rights or increased share of the output for the tenants will increase productivity (e.g., [Johnson \(1950\)](#); [Shetty \(1988\)](#); [Laffont & Matoussi \(1995\)](#); [Banerjee et al. \(2002\)](#)). Thus, it is possible the increased production could improve the welfare of both the landlord and the tenant. [Banerjee et al. \(2002\)](#) sheds light on the explanation with two possible mechanisms that are also applicable in the household example. The first is the bargaining power effect. In this paper, it is reflected in the increased value of dowry after the amendment, which could potentially result in more bargaining power for the bride. The second is the security of tenure. Similar to a tenant's confidence in retaining the rights of using the land, the marriage law amendment provides the bride confidence in retaining her pre-marital property.

To empirically test dowries' impacts, I utilize the 2018 China Labor-force Dynamics Surveys (CLDS)—the only available data that includes the marriage payments information. It also contains

comprehensive demographic, work, and consumption information. Dowries have been proven significant in raising a wife's bargaining power (e.g., [J. Zhang & Chan \(1999\)](#); [Brown \(2009\)](#); [Anderson & Bidner \(2015\)](#)). Using a similar strategy to [J. Zhang & Chan \(1999\)](#), I reproduce the results with a more novel dataset. Proxying the bargaining power with participation in chores, I found a higher dowry is associated with fewer chores for the wife and a more fair share between the spouses.

To test for any discontinuities and changes in the two marriage payment prices, I use the amendment as a cutoff point in the regression discontinuity design (RDD) estimation. As a result, I find that the amendment caused 24.1% and 24.9% leaps in the bride price and dowry, respectively—benefiting both the bride's family and the couple. This result indicates that even if a policy is initially established to benefit one side, in a society with excessive inequality, a Pareto improvement can possibly be achieved.

2. Institutional Background

2.1. Marital Transactions in Chinese Society

The marriage payment tradition has long existed in China.⁴ In a Chinese marriage, the pre-wedding rituals include the multiple transfers between the two families. The bride price (*Caili* or *Pinli*) is a wealth transfer from the groom's family to the bride's family (either as a single payment or multiple payments). A dowry (*Jiazhuang*) is the subsequent transfer from the bride's family to the new couple. The original idea of the bride price was to compensate the bride's family for their daughter's leave ([Zang & Zhao, 2017](#)). Ancient society was predominantly patrilocal, and the brides had few chances to visit their parents after the wedding ([McCreery, 1976](#)). Hence, a high bride price was regarded as necessary to compensate for the loss of productivity suffered by the bride's family. Dowries originated from the wish of the bride's parents for better treatment of their daughter in the new family ([Parish & Whyte, 1980](#); [Zang & Zhao, 2017](#)). Due to women being at a disadvantage in agricultural production, a wife tended to have a lower economic status ([Wolf & Huang, 1980](#)). A higher dowry could help to improve this situation and balance the bargaining power within a marriage.

⁴[Thatcher \(1991\)](#) finds that the tradition can be dated back to the periods of the Spring and Autumn and the Warring States (770–256 BC). The *Classic of Poetry* (also *Shijing*, 11th to 7th centuries BC), which is the oldest existing collection of Chinese poetry, already documented the prevalence of the tradition.

The amount of the bride price is usually signaled by the bride's family after the betrothal and before the wedding. During ancient times, arranged marriages were common and matchmakers worked as intermediaries who also helped negotiate bride prices (Ebrey, 1991). However, with the increasing pervasiveness of love marriages and the forbiddance of marriage arrangement as well as more information exchange between the two families before the wedding, it has become easier for the bride's family to know more about the groom's family and make a rational and reasonable offer regarding the bride price.⁵ Even though "marriage by purchase" has been strongly and consistently discouraged by the government of the People's Republic of China, there are no laws prohibiting all betrothal exchange, only laws forbidding "the exaction of money in connection with marriage" (Ocko, 1991). The groom's side usually does not haggle over the bride price to avoid leaving a bad impression (Zang & Zhao, 2017). Thus, the groom's family would either accept the offer or give up on the marriage. The bride price is usually paid in the form of cash; however, the process can go through one or several installments over the course of the engagement (Ocko, 1991; Brown, 2009).

After receiving the bride price, the bride's family has to decide how much they want to retain and how much wealth to give their daughter as the dowry. A dowry does not need to be negotiated with the groom or groom's parents and is fully treated as an internal decision of the bride's family (Ocko, 1991; Brown, 2009; Zang & Zhao, 2017). Different from bride prices, dowries are usually in the form of physical assets such as furniture, electronics, bedding, vehicles, and clothing.⁶ A bride is expected to have authority over the property she brings into the new conjugal household. However, in reality, the dowry could become a part of the common property in the marriage. In addition, before 2001, the law in China did not protect the wife's right to the dowry that she brought into the household because the marriage payments are regarded as a tradition of feudalism (*Fenjian*) (Ocko, 1991; Brown, 2009).⁷ Due to the nature of the forms of dowries, many types of premarital property have no official certifications of ownership. Hence, in practice, a dowry is treated as a shared resource in usage despite its actual ownership. However, because the wife has the right to the dowry, she may have more say in the property usage.

⁵For information on self-arrangement of marriages, see Zang & Zhao (2017). For information on bans on arranged marriages, see Article 1042 of the Civil Law of the People's Republic of China which states arrangement, selling, and intervention of marriages are illegal in China.

⁶Ocko (1991) documents the change in the forms of dowry during the People's Republic of China era.

⁷Ocko (1991) documents numerous disputes regarding the division of property owned before marriage prior to the amendment.

2.2. The 2001 Marriage Law Amendment

One of the main revisions reflected in the 2001 amendment to the 1980 PRC marriage law was the clarification of the property rights of individuals.⁸ The amendment has critical implications regarding the division of property in divorces. The 1980 version of the marriage law did not specify the division rules primarily due to the extremely low divorce rate and relatively less wealth that people owned (Honig & Hershatter, 1988; Yi & Deqing, 2000). The rising divorce rate in the 1980s and 1990s saw the urgency of clarification.⁹

There were two major revisions with respect to the property division in divorces. First, an individual would retain the ownership of the property that belonged to them prior to marriage (Chapter 3, Article 18). Second, the amended law gave spouses more flexibility to declare ownership of certain property obtained either before the marriage or during the marriage (Chapter 3, Article 19). In addition to property rights, the amendment clarified the process of dividing property in a divorce. If a divorce happens and an agreement cannot be reached in the negotiations for the division of property, a court has the ultimate power to decide the division based on the rule that children and the wife should be the priority of concern (Chapter 4, Article 39). This amendment provided further protection of a wife in a marriage since the relaxation of the legal restrictions on granting divorce in the 1980 marriage law.

3. Theoretical Model and Predictions

3.1. A Three-Agent Marriage Market Model

In this part, I propose a three-agent marriage market model involving the bride's family, the groom's family, and the new conjugal household if the couple gets married. The model follows the same procedure as the institutional background and is set as a single-period problem. Both the bride's and groom's families face two choices: whether to marry off their children or not. The order starts with a non-negotiable offer from the bride's side. Only if both families find that getting married is

⁸The amendment was officially passed in the Standing Committee of the National People's Congress of the People's Republic of China in April 2001.

⁹The demographic data analysis provided by Yi & Deqing (2000) shows that the divorce rate increased by 42% from 2.01% to 2.86% between 1982 and 1990.

more beneficial than the outside options (e.g., rejecting the marriage and continuing to search) can the marriage happen. Otherwise, both children's consumptions equal their outside options. If the couple gets married, a new household is formed, and the whole household's utility consists of both the husband's and the wife's utility.

3.1.1. Setup

This article focuses on payments instead of the problem of matching and mating. Consequently, the marriage market can simply be treated as the bargaining between families with a daughter and a families with a son.

For the bride's and groom's families, their utilities both consist of three parts: the utility from their own consumption, weighted utility from their children, and a constant gain or loss due to their children's marriage. The bride's and groom's parents' consumption comes entirely from their wealth. The initial wealth for the bride's family is W^F . If the daughter gets married, their wealth increases by the retained portion of the bride price; otherwise, their wealth stays the same. The daughter's utility derives from her consumption as well. Following [Corno et al. \(2020\)](#), [Corno & Voena \(2021\)](#), [L. Han et al. \(2015\)](#), and considering the dominance of patrilocality in marriage in China, I assume if their children get married, the groom's family experiences a constant utility gain, while the bride's family has to bear a constant loss.

Specifically, if their daughter gets married, the bride's family's utility U_m^F is:¹⁰

$$\begin{aligned} U_m^F &= \xi^F \cdot [u_1^F(c_m^{F,P})]^{\delta_1} \cdot [u_2^F(c_m^F)]^{1-\delta_1} \\ &= \xi^F \cdot [u_1^F(W^F + B - D)]^{\delta_1} \cdot [u_2^F(c_m^F)]^{1-\delta_1} \end{aligned} \tag{1}$$

where B and D are the notation for the bride price and dowry. $0 < \delta_1 < 1$ is the weight on the utility from their own consumption, and $0 < 1 - \delta_1 < 1$ is the weight on the utility from their daughter's consumption. ξ^F represents the loss of utility because of the daughter's leave. $0 < \xi^F < 1$ is a multiplier of a constant value. This is compared to an exogenous outside option, including rejecting the marriage and continuing to search. The idea is similar to the reservation utilities in

¹⁰In this article, a capital letter U defines a compound utility function. A lowercase u stands for an explicit form of the utility function. The subscript and superscript are used only to distinguish which individual the utility function reflects.

Anderson (2003). The outside option utility for the bride's family is a constant value \bar{U}_s^F .

$$\bar{U}_s^F = [\bar{u}_1^F]^{\delta_1} \cdot [\bar{u}_2^F]^{1-\delta_1} \quad (2)$$

\bar{u}_1^F and \bar{u}_2^F are the reservation utilities for the parents' consumption and the bride's, respectively, and there is no marriage-induced utility gain or loss. A similar problem faces the groom's family. If their son gets married, his family's utility U_m^M is:

$$\begin{aligned} U_m^M &= \xi^M \cdot [u_1^M(c_m^{M,P})]^{\delta_2} \cdot [u_2^M(c_m^M)]^{1-\delta_2} \\ &= \xi^M \cdot [u_1^M(W^M - B)]^{\delta_2} \cdot [u_2^M(c_m^M)]^{1-\delta_2} \end{aligned} \quad (3)$$

where $0 < \delta_2 < 1$ is the weight on the utility from their own consumption and $0 < 1 - \delta_2 < 1$ is the weight on the utility of their son. ξ^M reflects the gain of utility due to the addition of the daughter-in-law to their family. ξ^M is also a constant-value multiplier but larger than one. The groom's family's utility with regard to the outside option is \bar{U}_s^M :

$$\bar{U}_s^M = [\bar{u}_1^M]^{\delta_2} \cdot [\bar{u}_2^M]^{1-\delta_2} \quad (4)$$

\bar{u}_1^M and \bar{u}_2^M are the reservation utilities for the parents' consumption and the groom's, respectively. The new conjugal household's part exists if the first part of the marriage payments (bride price) occurs, which requires the condition that getting married is the better option for both sides:

$$U_m^M \geq \bar{U}_s^M, \quad U_m^F \geq \bar{U}_s^F \quad (5)$$

When the two conditions are satisfied, the second payment (dowry) enters into the new conjugal household's budget constraint. The household utility of the married couple is the combination of the weighted utility of the husband and wife:

$$U^H = \max_{c_m^M, c_m^F} [u_2^M(c_m^M)]^{\delta_3(D)} \cdot [u_2^F(c_m^F)]^{1-\delta_3(D)} \quad (6)$$

s.t.

$$c_m = c_m^M + c_m^F = w^M + w^F + D \quad (7)$$

where w^M and w^F are the respective incomes of the husband and wife. The incomes are set to be exogenous. Thus, individual income is not affected by the decision to get married.

The Pareto weight of the husband as a function of the dowry D satisfies the conditions that $\delta'_3(D) < 0$ and $\delta''_3(D) > 0$. This follows the same fashion in [Chiappori & Mazzocco \(2017\)](#), [Lise & Seitz \(2011\)](#), and [Lise & Yamada \(2019\)](#); additionally, I further incorporate the diminishing marginal returns of dowries.

3.1.2. Equilibrium under a basic utility function

To search for the equilibrium prices of the bride price and the dowry and conduct the comparative static analysis, I adopt a basic risk-averse utility function:

$$u = c^\gamma \quad (8)$$

where the degree of relative risk aversion is set as $0 < \gamma < 1$.¹¹

The actual marriage rituals follow the order of the bride's family's decision, the groom's family's decision, and the consequent effects on the new conjugal household if an agreement on marriage payments is reached. However, to solve the equilibrium, we need to look at the problem backwards.

3.1.2.1. Intrahousehold Allocations within the New Conjugal Household

In the first step, the new conjugal household maximizes the utility based on the dowry given:

$$\log(U^H) = \max_{c_m^F, c_m^M} \gamma \{ \delta_3(D) \log(c_m^M) + [1 - \delta_3(D)] \log(c_m^F) \} \quad (9)$$

s.t.

$$c_m = c_m^F + c_m^M = w^M + w^F + D \quad (10)$$

¹¹This assumption implies moderate risk aversion of individuals. Previous literature suggests an elasticity in a range of $[1, 2]$ is reasonable for CRRA utility function (e.g., [Chetty \(2006\)](#), [Morten \(2019\)](#), and [Corno et al. \(2020\)](#)) The solution of the subsequent model will not largely depend on this assumption.

There is also an underlying constraint from the both the bride's and groom's sides that getting married is better for both of them, and the decision of resource allocations is reached ahead of the marriage. Different from constraints for the parents' side, this assumption is logically easier to meet. First, the spouses will share the endowed dowry. Second, the analysis is based on the fact that the match has happened, which means the couple has found that the marriage benefits them. As a result, the first-order conditions lead to the solutions for both c_m^M and c_m^F :

$$c_m^M = \delta_3(D) \cdot (w^M + w^F + D) \quad (11)$$

$$c_m^F = [1 - \delta_3(D)] \cdot (w^M + w^F + D) \quad (12)$$

3.1.2.2. Maximization Problem of the Bride's Family

The consumption of a spouse is the household budget discounted by their Pareto weight. Considering the wages of the wife and husband are exogenous in the model, once the dowry is decided, the consumptions of both the wife and husband are decided. Thus, we can take the solutions back to the utility maximization problem of the bride's family. The problem for the bride's family transforms into the maximization of utility with regard to the dowry given any bride price.

Theoretically, the value of dowry D is not bounded by any restriction in this tradition since borrowing is also allowed. However, it is straightforward to conclude that the optimum is strictly less than the bride's family's wealth plus the bride price under the values of the parameters.

After knowing dowry D is a function of bride price B , the control variable in the bride's family's maximization problem becomes B :

$$\log(U_m^F) = \max_B \log(\xi^F) + \gamma \{ \delta_1 \cdot \log(W^F + B - D(B)) + (1 - \delta_1) \cdot \log(c_m^F) \} \quad (13)$$

Hence, the bride's family wants to set the bride price as high as possible. The derivative of the utility function of the bride's family with respect to the bride price is always a positive value (see the proof in Appendix A.1). This means the bride's family will want the bride price to be as high as possible as long as the groom's family accepts.

3.1.2.3. Marriage Payments under Equilibrium

The Upper Limit of the Bride Price for the Groom's Family: The result of maximization problem shows that the bride's family's utility is monotonically positively correlated with the bride price received. However, they cannot ask for an unlimited bride price due to the constraint that the groom's family would not find the marriage attractive if the bride price required is too high. Thus, the utility of getting married for the groom's family must satisfy being no smaller than the outside option (e.g., rejecting the marriage and continuing to search):

$$\xi^M \cdot [u_1^M(W^M - B)]^{\delta_2} \cdot [u_2^M(c_m^M)]^{1-\delta_2} \geq \bar{U}_s^M \quad (14)$$

The upper limit of the bride price is achieved when the left-hand side (LHS) equals the right-hand side (RHS). Due to the fact that the bride price offered is non-negotiable, equality should be achieved.

The Reservation Bride Price for the Bride's Family: Once the bride's family knows the upper limit of the bride price and the distribution of the resources for the couple given any value of D , they also need to consider their own constraint that their daughter getting married is better than the outside option:

$$\xi^F \cdot [u_1^F(W^F + B - D)]^{\delta_1} \cdot [u_2^F(c_m^F)]^{1-\delta_1} \geq \bar{U}_s^F \quad (15)$$

When the equality is achieved, the bride price is the minimum value for the bride's family to agree on the marriage. Meanwhile, if the inequality holds, the difference between the LHS and RHS ($U_m^F - \bar{U}_s^F$) is the surplus the bride's family will gain from their daughter's marriage.

In other words, we can treat the rule deciding the bride price as a bargaining process where the weight on the groom's side is zero. This leaves no surplus for the groom's family, and the upper limit underpins the exact bride price the bride's family will ask for if the reservation price condition is met.

A comparative static analysis of how family characteristics influence the equilibrium of the two marriage payment prices is also provided in Appendix A.3.

3.1.3. Implications of Model under Equilibrium

After I derive the equilibrium prices between bride prices and dowries, I further investigate their directions and scales. There are two transfers between the two families and the parents and children. Under the assumption of patrilocality and altruism in the model, this part provides some logical evidence that in general cases, marital transfers occur in the direction from groom's family to the bride's family in a positive amount, and then from the bride's family to the couple. In other words, it is rare for the bride's family to pay the groom's family or for the bride's family to not transfer wealth to the couple.

LEMMA: In the dowry rule A7, any exogenous increase in the bride price increases the dowry: $\partial D / \partial B > 0$.

Proof: *see Appendix A.2*

Given a fixed set of family characteristics, both the bride price and the dowry will be decided. Additionally, when all other exogenous factors are also decided, every single value of the bride price corresponds to a single value of the dowry. In other words, any exogenous factor (e.g., a change in the parameters) that increases the bride price and does not directly affect the bride price raises the dowry, even though the relationship might not be linear.

PROPOSITION 1: The bride price is always positive (in a direction from the groom's family to the bride's family).

A negative "bride price" is sufficient for $\bar{c}_2^M > c_m^M$ and a large value of w^F . Not only does the first condition contradict the presumption, but the two conditions also contradict each other.

Proof: *see Appendix A.2.1.1*

A transfer from the groom's family to the bride's family occurs easily because of the positive gain of utility for the groom's family. Since the transfer from the bride's family to the groom's side does not bring direct utility gain to the former, the marriage would not be attractive to the bride's family unless the gain of their daughter's utility is large enough to compensate for the loss of utility from the daughter's leave and the payment of the bride price. Additionally, this means the groom brings much more income to the household than the bride, which makes his consumption less than before the marriage and contradicts the presumption. Thus, intuitively, this combination is impossible to achieve

unless the groom's family essentially "sells" their son for their benefit.

In addition, given a non-negative boundary constraint for the bride price ($B \geq 0$), a zero payment of the bride price ($B = 0$) is still unusual if we also impose a non-negative constraint for the dowry amount ($D \geq 0$). Given the presumption $\bar{c}_2^M < c_m^M$ and $\bar{c}_1^M < W^M$, there cannot exist a solution satisfying $B = 0$ and $D \geq 0$ at the same time.

Proof: *see Appendix A.2.1.2*

In this case, the groom's family does not pay the bride price because their son is much wealthier than the bride, so the bride benefits much more from the marriage. The same situation applies for a negative "bride price." Meanwhile, after receiving no bride price, the only reason the bride's family would want to transfer wealth to the couple is that the spouses are relatively poor and the bride's family is wealthy enough. Thus, the two conditions contradict each other.

In conclusion, since the situation leads to a worse-off situation for the groom because of the marriage, intuitively, the matching of the two spouses would rarely occur in the first place.

PROPOSITION 2: A zero transfer of dowry ($D = 0$ and $B > 0$) may occur when W^F is small and w^M and w^F are large.

When $D = 0$, B is not correlated with W^F . When W^F is smaller than $\frac{\delta_1}{\frac{1-\delta_1}{w^M+w^F} + \frac{(1-\delta_1)\alpha_1}{\alpha_0(1+\alpha_0)}} - B$, the bride's family will choose not to transfer any wealth to their daughter. Meanwhile, when w^M and w^F are large, the condition is easier to be met.

Proof: *see Appendix A.2.1.3*

Being compensated with a bride price and having no need to transfer wealth makes a marriage attractive to the bride's family. The only reason the bride's family will not want to transfer wealth to the couple is that the bride's family is relatively poor, so they cannot afford to give away any money to their daughter (high marginal cost); meanwhile, their daughter earns enough. This situation appears to be less common considering the combination.

PROPOSITION 3: Dowry exceeds the bride price ($D > B$) when W^F is large and w^M and w^F are small.

When the bride's family's wealth satisfies $W^F > \frac{\delta_1}{\frac{(1-\delta_1)\alpha_1}{(\alpha_0+\alpha_1 B)(1+\alpha_0+\alpha_1 B)} + \frac{1-\delta_1}{w^M+w^F+B}}$, they will transfer more wealth to their daughter than the bride price they receive. Meanwhile, when w^M and w^F are

small, the condition is easier to be met.

Proof: *see Appendix A.2.1.4*

When the groom's family is not as wealthy as the bride's family, a lower bride price will be paid. This leads to relatively higher payment of dowry from the bride's family. Intuitively, the bride's family can take advantage of this situation to harvest more bargaining power for their daughter. It should be noted that Proposition 3 and Lemma 1 reflect two different aspects and do not contradict each other. Given any family characteristics, a higher bride price is always linked to a higher dowry. However, when the bride price is low, it is possible that the dowry can exceed the bride price.

PROPOSITION 4: A higher patrilocal gain for the groom's family increases their willingness to pay.

In addition to family characteristics, patrilocality is an exogenous factor in shifting the bride price. The higher the patrilocal gain (ξ^M) for the groom's family, the more they will pay for the bride price given the fixed family and individual wealth.

Proof: *see Appendix A.2.2*

This is a general rule that applies to all cases regardless of family characteristics. At the same time, even though the patrilocality gain means a loss to the bride's family, the loss does not directly affect the dowry rule. However, the increase in the bride price would naturally increase the dowry amount. On the other hand, the intuitive explanation for the increase in dowry attributes to the fact that the more the bride contributes to the groom's family, the less connection she may keep with her natal family. In this case, her parents would want to give her more protection by transferring more wealth to her.

3.2. External Shock on the Value of Dowries

With the 2001 marriage law amendment, dowries become more valuable in shifting power to the wife's side. This can be achieved by a constant gain in the Pareto weight (because the bride's family now has the belief that their property will be better protected by law after getting into the marriage) or a higher marginal benefit from dowries (the impact of every single *yuan* becomes larger). These two channels result in similar results in terms of the changing direction of the marriage payments.

The impacts of the amendment on dowries are in two different directions since dowries factor into both the consumption and the bargaining power of the spouses. First, regarding the dowry rule, given the same amount of the bride price, the bride's family can now transfer less wealth to maintain the same level of bargaining power for their daughter. This is directly reflected as the income effect. With the new dowry rule, the bride price will also be adjusted. However, because a dowry has become more valuable (higher marginal benefits), the bride's family will find it more attractive to transfer a little more to their daughter. This is reflected as the substitution effect. Hence, with the positive shock on dowry, theoretically, the change of the amounts of the two wealth transfers is uncertain.

Depending on the parameters, the change of the two marriage payment prices could only occur in the two main directions presented below:¹²

		Bride price	
		Increase	Decrease
Dowry	Increase	✓	✗ [†]
	Decrease	✗	✓

[†]May be true under a less common condition.

Suppose the income effect leads to the dowry dropping from D^* to D , and the shift due to the substitution effect is $D^{**} - D^*$. Both marriage payments will increase when $D^{**} - D^*$ is larger than $D - D^*$, and vice versa. Hence, $D^{**} = D$ presents the turning point for the change of direction, measured in terms of the spouses' bargaining power. When the inequality within the household is high, the income effect tends to be small, and the substitution effect will dominate, and vice versa.

Proof: *see Appendix A.2.3*

When both marriage payment prices increase (when inequality is high and the substitution effect dominates), it results in a more interesting case since it will be a Pareto improvement. Both families are more willing to transfer more wealth to their children since they both can get more utility from the altruistic part; thus, both spouses' consumption will increase. For the bride's family, not only will they enjoy higher utility from their altruism, but they also gain it through higher consumption. Since the groom's family always gets the utility the same as the outside option, they are not hurt by the

¹²The less common condition is based on a zero payment of dowry before the amendment, the amendment incentivizing the bride's family to transfer a small amount of wealth, and the effect being led by increasing marginal value of dowries. See Appendix A. for the proof.

amendment. However, when both of the marriage payment prices decrease after the amendment, it shows the increased marginal benefits from the altruism of the bride's family are comparatively small. In the case of both prices decreasing, even though the groom will have less consumption, the change for the bride is uncertain.

A concern is if the marriage law amendment changes the optimal matching between individuals. The previous marriage payment equilibrium analysis is based on the post-matching results. This means the matching of spouses is already the optimal solution. To test the matching issue, I follow the thread of the positive assortive mating approach by [Becker \(1973\)](#). The study's result indicates that if one or more traits—not affected by exogenous factors—are involved in the matching process, the matching results are fixed. The case is similar to the setup of my model since only wealth and income are present. Thus, unless there are other spouses' traits that will be directly affected by the amendment, the ranking of candidates for an individual will not change; the optimal matching results will also not change.

4. Empirical Analysis

This part presents empirical evidence to test the models presented in the previous section with survey data. The analysis comprises two parts: The first part examines intrahousehold inequality and the relationships between dowries and the wife's bargaining power with empirical evidence and a structural model; the second part tests the effects of the marriage law amendment.

4.1. Data and Summary Statistics

Estimation requires information on marriage payments from both sides, characteristics of both families, and the allocation of resources and time for the married couple. A unique dataset that meets these requirements is the 2018 China Labor-force Dynamics Surveys (CLDS).¹³

¹³CLDS data are panel datasets that were conducted in 2011, 2012, 2014, 2016, and 2018. However, only the 2018 dataset provides complete information on marriage payments. Previous surveys asked only about the total expenditures from the groom's parents (bride prices). The 2018 survey asked not only both the groom and bride about their betrothal payments from their parents (bride price and dowry, respectively) but also their spouse's parents' marriage payments (dowry and bride price, respectively), which helps to verify whether the reported payments are consistent between the spouses.

4.1.1. Description of CLDS data

The surveys cover 29 provinces (or equivalents) in total, and the data include three parts: community, household, and individual surveys.¹⁴ As the name suggests, the surveys involve only the eligible labor force aged between 15 and 64 (regardless of whether they actually work or not). The household and individual datasets can be linked by the household ID. Due to the purpose of my research, I select only the households of married (or engaged) couples in which one of the spouses is regarded as the household head.

For the individual-level data, the surveys ask for the individuals' information as well as their parents'. For the main variables of interest, the marriage payment questions are as follows:

- Marriage Payments
 - How much did your family spend for your first marriage (such as betrothal gifts and bride price or dowry) _____*yuan*?
 - How much did your spouse's family spend _____*yuan*?

I access the answers from both sides and drop the observations with inconsistent payment amounts.¹⁵ Other information at the individual level includes demographic information, *hukou* status, wedding years, education levels, occupations, incomes, allocations of time on working and chores, and migration history.¹⁶ For parental information, individuals are asked about their demographic information, *hukou* statuses, education levels, and occupations if they are still in the labor force. However, one disadvantage is that the surveys do not ask about the parents' wealth or income.

The household part mainly surveys the household member structures, living conditions, income, and expenditures. Every household has one member registered as the household head in *hukou*. This helps to select the sample for the analysis. The main variables I am interested in are those related to expenditure or consumption, which reflect the allocations of resources. The surveys ask not only

¹⁴The community part mainly surveys the development of the villages or neighborhoods, so I will not focus on this part.

¹⁵I allow a tolerance of a 10% difference.

¹⁶*Hukou* or the household registration system is a national classification policy in China. This system categorizes Chinese citizens as either "rural" or "urban" *hukou*. *Hukou* is associated with the welfare, benefits, and opportunities provided by the government. Local governments decide what benefits residents with local *hukou* and migrants can enjoy. The public service and welfare are attached to a person's *hukou* status instead of their physical location. Typically, residents without local *hukou* can enjoy no or very limited resources provided by the local government.

about the total consumption but also the subcategories. Combined with individual time allocation information, this helps to construct home production information.

4.1.2. Summary Statistics

After dropping single-member families, there are 1,196 observations of two-spouse households with complete individual-level data, among which 651 have complete household-level information. Table 1 presents the summary statistics of the main variables at the individual level (Panel A) and household level (Panel B).

[Insert Table 1 here]

The average ages for female and male samples are 46.16 and 47.77 years old, respectively. Among these married couples, the percentages of couples married in the 1980s, 1990s and after 2000s are 31.4%, 37.6% and 31.0%, respectively. Both men and women in the sample see high labor force participation rates, consistent with the continuing trend of comparatively high labor force participation rates among Chinese women (Maurer-Fazio et al., 2011). At the same time, only 3.5% of men are out of the labor force, while the rate is approximately 18% for women. On average, a man works twice as long as a woman in the labor market. However, for chore participation, a much lower rate can be observed among husbands. Only 2.2% women do not do any chores, but the rate reaches 32% among men. In addition, a woman spends 15 hours weekly on chores on average, while the number of hours totals just 4 among husbands.

For the household level, the average bride price and dowry for the sample are 9,867 and 5,234 *yuan*, respectively.¹⁷ It should be noted that the majority of the sample got married 30 or 40 years before the surveys when China was in the beginning of its economic reform and transitioning from a planned economy to a market economy. These two values should be treated as considerable at that time.

4.2. Reduced-Form Evidence on the Impacts of Dowries

In order to find an indicator to reflect the bargaining power of an individual within the family, following the strategy in J. Zhang & Chan (1999), I look into individual participation in chores at home.

¹⁷All prices involved in this paper are CPI adjusted to the 2000 values in each province.

As mentioned in the data summary, the disparity between chore participation and time investment between the two genders is substantial. Considering that almost all of the women in the sample participate in chores regardless of their income or education levels, but a third of men do not engage in any housework, I test whether there is a positive relationship between the dowry amount and an individual's chore participation. The specification is below:

$$Chores_{i,k} = \mathbf{X}_{i,k}\beta_1 + \kappa_k + \varepsilon_{i,k} \quad (16)$$

To measure chore participation, I construct three indicators: a wife's time spent on chores, the ratio of time spent on chores and working time for working women, and the time difference between the husband and the wife on chores. The primary explanatory variable is the value of dowries. Different from [J. Zhang & Chan \(1999\)](#), I do not incorporate the bride price because the data from their surveys show that dowries are significantly higher than bride prices in Taiwanese society, which is a different situation from the surveys that I use to some extent.¹⁸ Table 2 presents the estimation results.

[Insert Table 2 here]

The table shows that dowries have significant impacts on all three indicators, and the results indicate less time spent on chores for women and more participation of husbands. First, a 1% increase in a dowry leads to a 9 – 10% reduction in the wife's time spent on chores. The conclusions still hold when individuals' *hukou* and education levels are taken into account, and provincial fixed effects are controlled. Second, for those working women, dowries also play a significant role in shifting their time scheduling. A 1% increase in a dowry is associated with an 8 – 10 percentage points decrease in the weekly chore-to-work ratio for working women when the provincial fixed effects are not controlled. Furthermore, when husbands are taken into account, a higher dowry helps to reduce the deficit of time on chores of husbands and wives, where a nearly 9% decrease is associated with a 1% increase in a dowry. However, the deduction of the deficit is mainly from the power gained by the wives, presumably because of the already low participation rate of the husbands.

¹⁸In addition, their research finds only dowries have impacts on husbands' participation in chores while bride prices see minor and insignificant coefficients.

4.3. The Impacts of the Marriage Law Amendment on Marriage Payments

4.3.1. RDD estimation

In this part, I test whether the marriage law amendment leads to a discontinuity of the marriage payment with empirical data. The theoretical part suggests two directions of change may occur under different situations. Thus, if the theory is valid, in a case of a less equal family, the law amendment should induce higher incentives for the bride's family to transfer wealth to the couple and for the groom's family to pay a higher bride price. Hence, positive discontinuities of the two marriage payments should be observed in the 2001, the year the marriage law amendment was introduced. First, I examine the graphic evidence of discontinuity by looking into the time trends of the two marriage payment prices. I also calculate the ratios of the dowry to the bride's income and to the bride price to reflect the marginal value of dowries. The two scatterplots in Figure 2 and Figure 3 present the average bride price and dowry, respectively, through the sample years.

[Insert Figure 2 here]

[Insert Figure 3 here]

There is an upward trend for both marriage payments because society is becoming wealthier. However, there is a clear discontinuity in 2001, where an upsurge can be observed in both prices.

In addition, to reflect the increased marginal value of dowries, I further calculate two ratios: the dowry to the bride's income and to the bride price. The two scatterplots in Figure 4 and Figure 5 present the average dowry-to-bride income and dowry-to-bride price ratios, respectively, through the sample years.

[Insert Figure 4 here]

[Insert Figure 5 here]

The interesting phenomenon about the dowry-to-bride income ratios is that before the introduction of the amendment, the flat regression line is consistent with the dowry being relative to the income per capita. However, after 2001, not only is there a jump in the ratio but also a continuously increasing trend afterward. For the dowry-to-bride price ratios, there is a downward trend. If the gender equality issue has been improving over time, the marginal benefit of dowries in improving wives' bargaining power would diminish. However, the sudden jump in the ratio in 2001 may indicate an abrupt increase

in the value of dowries. In addition, evidence of the direct impacts of the amendment on property values is provided in Appendix B.

In order to test the magnitude of the discontinuity due to the law amendment, I adopt a regression discontinuity design (RDD) strategy to analyze the scale of the effect. The basic specification is below:

$$Price_{i,t} = \beta_2 + \beta_3 D_i + \beta_4 T_{i,t} + \beta_5 D_i \cdot T_{i,t} + \varepsilon_{i,t} \quad (17)$$

$Price_{i,t}$ is either the bride price, dowry, or ratio indicators. D_i is a dummy variable that indicates if the year when the couple got married was after the amendment (1 if after 2001 and 0 if before 2001). $T_{i,t}$ stands for the wedding year measured relative to 2001, which captures the time trend. The specification also includes the interaction term of the dummy variable, the time trend term, and the error term. Hence, the estimand β_3 reflects the discontinuity: $\beta_3 = \lim_{T \uparrow A^*} E[Price_{i,t} | T_{i,t} = Amendment] - \lim_{T \downarrow A^*} E[Price_{i,t} | T_{i,t} = Amendment]$. In addition, considering that the bride's income used in calculating the dowry-to-bride income ratios is her current income, I further include the control variable of the bride's age at which she got married. Table 3 presents the estimation results:

[Insert Table 3 here]

The first four columns test the effect on the bride price and dowry, where both the actual currency values and values after IHS conversion are presented. The last two columns present the dowry-to-income and dowry-to-bride price ratios results. The estimation shows that the increase of dowries and the dowry-to-income ratio at the timing cutoff is consistently significant at the 10% level or higher. The increase of the exact bride price and dowry values amount to 2,243 and 1,214 *yuan*, respectively. The average bride price and dowry before the law amendment were 9299.72 and 5277.67 *yuan*, respectively; thus, this amendment amounts to 24.12% and 22.94% increases for the two marriage payment prices. The average dowry-to-income ratio prior to the amendment was 0.93; thus, the amendment helped to raise the ratio considerably to 2.0. The amendment raised the average dowry-to-bride price ratio by 7.5 percentage points from 0.61.

The following part proves that 2001 was a clear timing threshold when the two marriage payments started to be affected simultaneously. The correlation between the two marriage payments and the running variable should be the strongest in the year 2001. This should be reflected as the R-squared

values peaking at the year 2001 in the regressions. Hence, if we set different cutoff points around the year 2001, the distributions of the R-squared values of the two prices should display similar concave shapes. I graph the R-squared values in a sequence of cutoff points (-5 to 5 relative to the year 2001) in Figure 6.

[Insert Figure 6 here]

Both R-squared distributions show a similar concave pattern along the sequence. We can clearly observe that the two distributions jointly peak at the zero cutoff point, where both the bride price and dowry reach R-squared values that are close to the highest. There are inconsistencies between the two distributions at some points. These may be due to some factors affecting only one of them. However, since the test is about if the year 2001 best explains simultaneous positive discontinuities, it is reasonable to conclude that 2001 is the best cutoff point based on the joint peak.

4.3.2. Robustness Tests on the Impacts of the Marriage Law Amendment

4.3.2.1. Manipulation of the Wedding Years around the Year of Implementation

This part examines the general concern of testing the implementation of any policies that a manipulation may occur around the year when a policy is introduced. The concern regarding this specific amendment is reflected in two parts both before and after the year of implementation. Since the hearing of the amendment was held one year ahead of the implementation in October 2000 and the release of the information could have been even earlier, some people would have expected the future implementation of the amendment. Thus, if these people got married one or two years ahead of the amendment, they may have chosen to set the bride price and dowry according to the new information. In contrast, for those who are less sensitive to political news, it might take some time for them to adjust to the new law. Thus, they may still set the marriage payment prices according to the old law. In addition to the marriage price aspect, the timing in which couples got married may have been affected. Because this amendment is pro-woman, a couple, especially the bride's side, would want to wait to see how the policy would be implemented if they were initially planning to register around those years. Though I cannot directly test the first case, it is possible to conduct a McCrary density test to examine whether there was an abnormality around the year of implementation. Following [Cattaneo et al. \(2020, 2021\)](#), I conduct a hypothesis test about whether the density near the cutoff point is

discontinuous. Table 4 below presents the result.

[Insert Table 4 here]

The test clearly indicates there is a manipulation around the year of the implementation of the amendment. It indicates some couples adopted a “wait to see” strategy. Thus, in order to avoid the interference of the lag and lead effects, I employ the donut RDD method. Table 5 below shows the results with one (top) and two (bottom) years excluded on each side.

[Insert Table 5 here]

Table 5 shows that the magnitudes of all six indicators of both new samples are larger than the original test. In addition, higher significant levels can also be observed in the new estimation. The difference is especially noticeable in the sample with two years on each side excluded where the discontinuity of the bride price is almost doubled and the dowry estimation sees a nearly 50% increase. The donut RDD regression results further strengthen our findings in respect to the impacts of external shocks on the marriage payments.

4.3.2.2. Robustness Tests on the Impacts of China’s Entry to the WTO

This part addresses the concern regarding the effects of other events that happened in 2001. If another nationwide shock increases the wife’s bargaining power, we might observe a similar pattern of discontinuities. In this robustness test, I mainly consider China’s entry into the World Trade Organization on December 11, 2001. The entry provided many job opportunities in the manufacturing industry. If women with disadvantageous economic status benefit more from the entry, the increased bargaining power may lead to a higher incentive for her family to transfer more wealth. There are two possible channels: first, the entry leads to more labor force participation among married women (Dai et al., 2021); second, the textile and clothing industries benefit most from the accession to the WTO (Yeung & Mok, 2004). The entry to the WTO, however, affected some areas more than others due to different degrees of exposure to trade (J. Han et al., 2012). Thus, if this theory holds true, we should expect a more considerable increase in marriage payments in the regions more exposed to entry to the WTO. I classify the regions into two groups—more exposed and less exposed—according to the same measurement adopted in J. Han et al. (2012). The RDD estimation for the two groups is presented in Table 6.

[Insert Table 6 here]

Contrary to the hypothesis, the estimation shows an opposite direction. The less exposed areas observe significant increases in both the bride price and dowry on a much larger scale. However, none of the four differences between the coefficients from the two groups are significant at the 5% level (note the bride price test is in the opposite direction). Hence, I can reject the hypothesis that entry to the WTO explains the discontinuities. There are two main reasons. First, the entry raises the spouses' individual consumption mainly by increasing the budget. However, the marriage law amendment increases dowries' value and indirectly increases both the bargaining power and the budget. Thus, the entry would not result in a higher incentive for the parents on the two sides to transfer more wealth. Second, the areas more exposed to entry are also the more developed regions. Thus, the difference in the scales of the discontinuities is not from the exposure to the entry but the equality level within a household. The average bride price and dowry in the more exposed areas before 2001 were 10183.23 and 6301.68 *yuan*, compared to 8491.66 and 4396.50 *yuan* for the counterpart. Instead, the result is consistent with the previous theoretical implication that families with high inequality would expect a larger increase in both prices.

5. Conclusions

I have constructed a simple model of the marriage market to explore the bargaining process of the families on both sides regarding a bidirectional marriage payment tradition in Chinese society: the bride price and the dowry. I also investigate the consequential impacts of the marriage payments on spouses' intrahousehold bargaining power by adopting a collective model. By taking advantage of a pro-woman marriage law amendment, I examine how the amendment increases both families' willingness to transfer more wealth. The result leads to a Pareto improvement for all sides in a society with high gender inequality. My research helps to understand the importance of gender roles in a traditionally conservative society with reference to one of the most important events in a person's life: marriage.

In the discussion of the bargaining process regarding marriage payments, I complement the existing literature by allowing bidirectional and non-zero-sum wealth transfer between the families on the two sides. The non-negotiable bride price offer and the subsequent dowry are based on a maximization

problem of the bride's family, where the parents' utility comprises both their own and their daughter's consumption as well as the utility loss from the daughter's marriage due to the patrilocal tradition. To examine the role of dowries and intrahousehold inequality, I build a collective model that involves intrahousehold bargaining between spouses. I introduce the heterogeneity into the Pareto weights of individuals by incorporating the dowry payment. By observing the allocation of resources and time in each family, I find dowries increase a wife's bargaining power even though her Pareto weight is relatively weaker (~ 0.2). Last, I discuss how a positive external shock that increases the value of dowries can lead to a Pareto improvement for all sides by increasing both payments.

This article provides empirical evidence to test the predictions of the theoretical models with both structural model estimation and reduced-form methods. A unique dataset that includes marriage payment information and family characteristics is adopted. The RDD estimation regarding the impacts of the marriage law amendment indicates positive increments in both marriage payments. The marriage law amendment resulted in positive changes in both bride prices and dowries, where a 24.12% increase in the bride price, a 22.94% increase in the dowry, and a 7.5 percentage points jump in the dowry-to-bride price ratio is observed.

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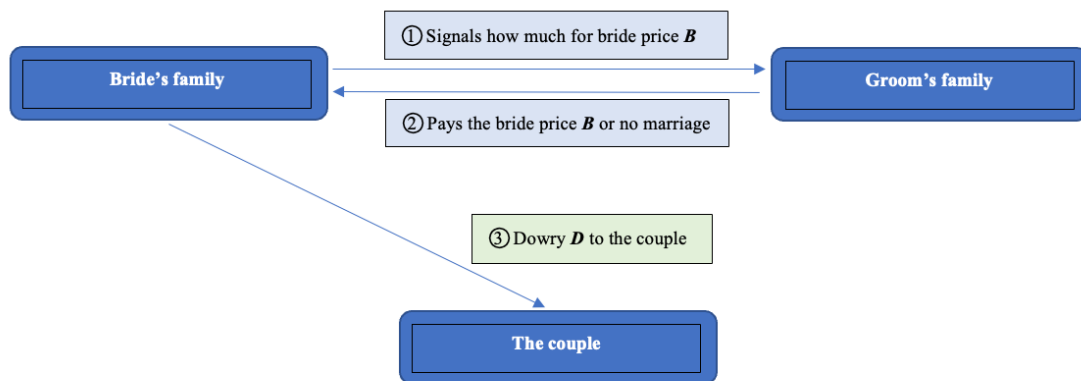
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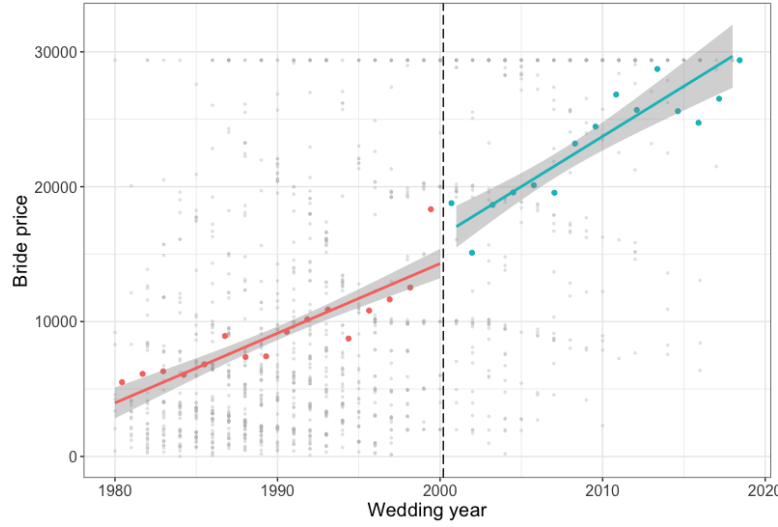
Figures

Figure 1: The Process of Payments in A Marriage



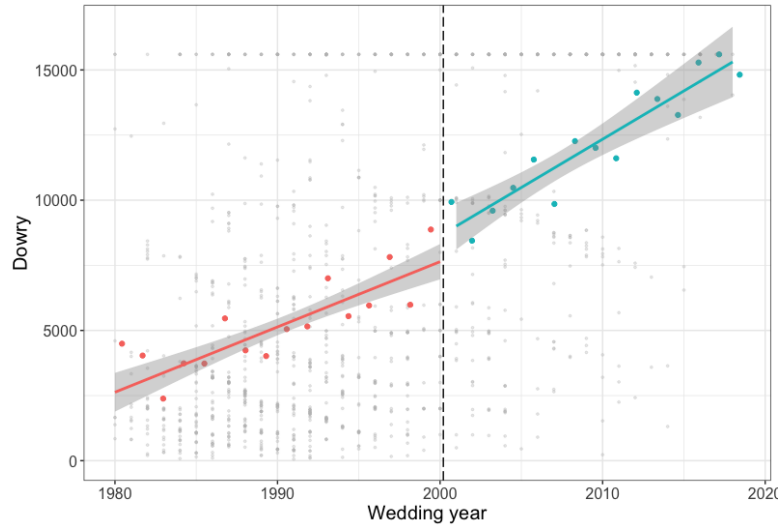
Note: This flowchart demonstrates the process of the two marriage payments: bride prices and dowries; the numbers indicate the order. Bride prices (**B**) are usually in the form of cash, and dowries (**D**) are in the form of physical assets. The bride price is signaled by the bride's family to the groom's family and is usually non-negotiable. There is no restriction on the relationship between the values of a bride price and a dowry.

Figure 2: Relationship between Wedding Years and Bride Prices



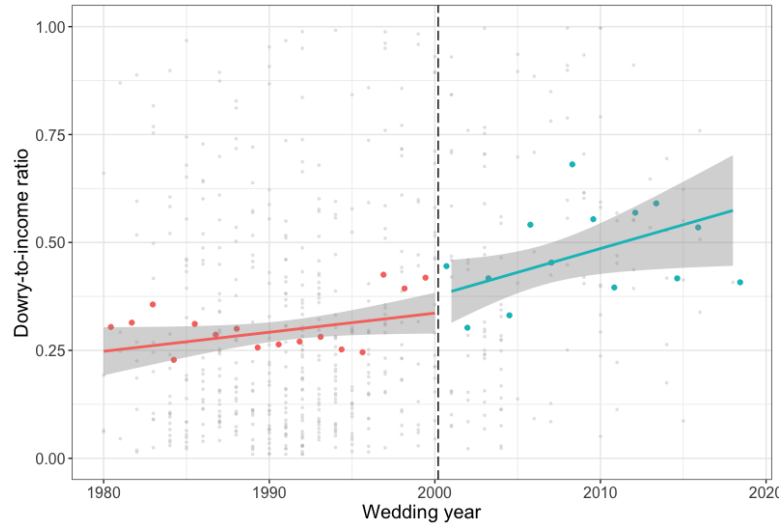
Note: This figure demonstrates the time trend of bride prices from 1980 to 2018. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The sample size is 1,461. The vertical axis is the bride price (yuan). Each dot stands for the yearly average bride price. The horizontal axis stands for the years when the couples got married. The cutoff line is the year 2001, when the marriage law amendment was implemented. The data is winsorized at the 0.5% level at both the top and bottom.

Figure 3: Relationship between Wedding years and Dowries



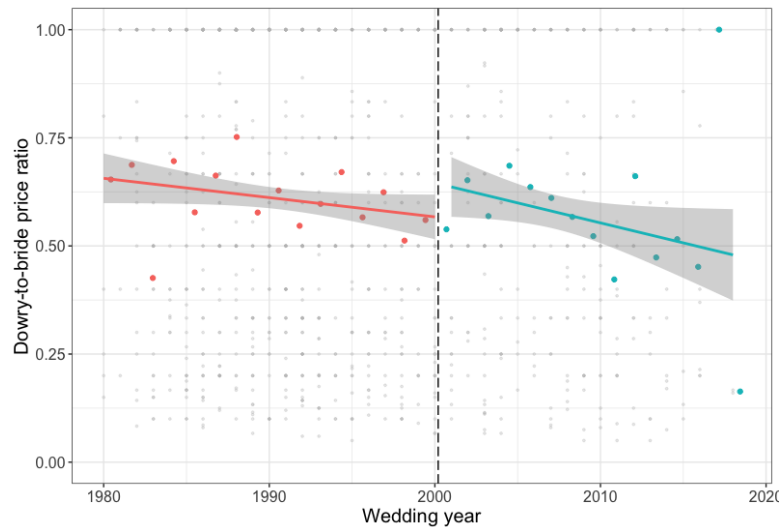
Note: This figure demonstrates the time trend of dowries from 1980 to 2018. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The sample size is 1,207. The vertical axis is the dowry(yuan). Each dot stands for the yearly average. The horizontal axis stands for the years when the couples got married. The cutoff line is the year 2001, when the marriage law amendment was implemented. The data of dowries is winsorized at the 0.5% level at both the top and bottom.

Figure 4: Relationship between Wedding Years and Dowry-to-bride income Ratios



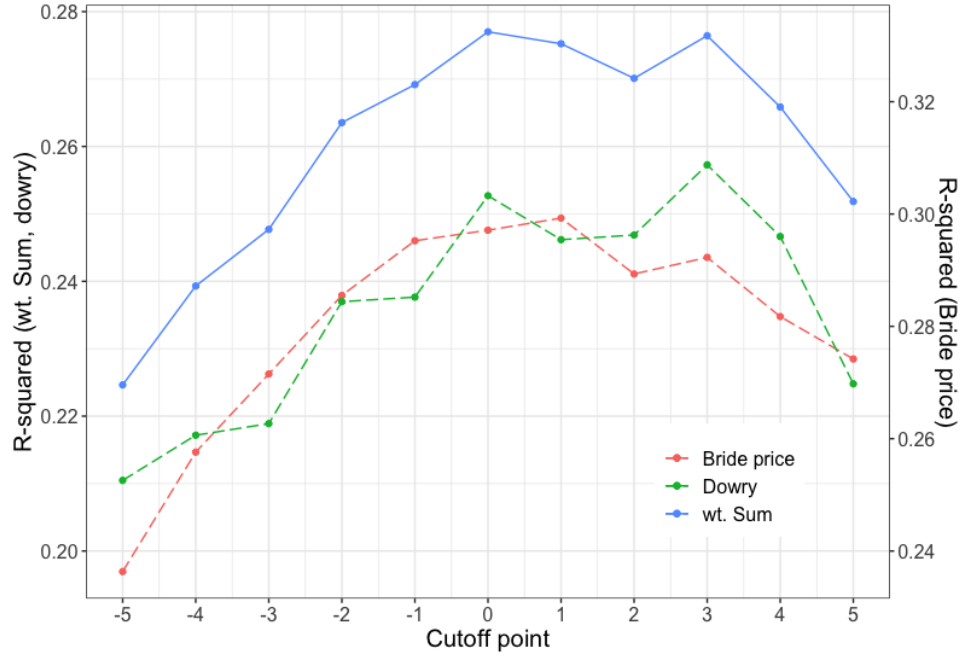
Note: This figure demonstrates the time trend of dowry-to-income ratios from 1980 to 2018. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The sample size is 804. The vertical axis is dowry-to-income ratios. Each dot stands for the yearly average. The horizontal axis stands for the years when the couples got married. The cutoff line is the year 2001, when the marriage law amendment was implemented.

Figure 5: Relationship between Wedding Year and Dowry-to-bride price Ratios



Note: This figure demonstrates the time trend of dowry-to-bride price ratios from 1980 to 2018. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The sample size is 1,032. The vertical axis is dowry-to-bride price ratios. Each dot stands for the yearly average. The horizontal axis stands for the years when the couples got married. The cutoff line is the year 2001, when the marriage law amendment was implemented.

Figure 6: R-Squared from RDD Regressions for the Sequence of Thresholds



Note: This figure demonstrates R-squared values given different threshold assumptions on when the marriage law amendment started to affect the two marriage payments. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The left vertical axis shows the scale of R-squared values for bride price RDD estimation. The right vertical axis shows the scale of R-squared values for dowry RDD estimation. The cutoff point values are relative to the year 2001, when the marriage law amendment was implemented. The Bandwidth type is chosen based on the method proposed by [Imbens & Kalyanaraman \(2012\)](#). The kernels are set as normal to ensure the bandwidths are within the range of data with the change of the cutoff points.

Tables

Table 1: Summary Statistics

Panel A: Individual Data		
	Bride	Groom
Age (years)	46.16	47.77
Age at Marriage (years)	22.36	24.04
Income (<i>yuan</i>)	1,9445	3,4416
Labor Force Participation Rate	82.14%	96.46%
High School Education Percentage	22.00%	30.60%
Average Working Hours (weekly)	18.08	32.01
Chore Participation Rate	97.80%	68.00%
Average Hours on Chores (weekly)	15.10	4.14
Panel B: Household Data		
	Household	
Bride Price	9,867	
Dowry	5,234	
Dowry-to-bride price Ratio	80%	
Total Consumption (annually)	26,635	
Food Consumption (annually)	6,728	
Number of Observations	1,196	

Notes: The results use the sample from the 2018 China Labor force Dynamics Surveys (CLDS). All prices are in 2000 value in each province (or equivalents). The variables of age, age at marriage, income, working hours, and hours on chores at the individual level and variables of bride prices, dowries, total consumption, and food consumption at the household level are the sample averages.

Table 2: Reduced-form Evidence: Relationship between Dowry and Chore Participation

	<i>Dependent variable:</i>								
	Wife's time on chores			Time on chores / Time on work (Wife)			Husband's - Wife's time on chores		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dowry	-0.096***	-0.101***	-0.095***	-0.082***	-0.082***	-0.046*	0.101***	0.103***	0.091***
	(0.021)	(0.021)	(0.023)	(0.024)	(0.024)	(0.028)	(0.038)	(0.038)	(0.041)
Dependent Variable Mean	4.258	4.286	4.419	1.343	1.339	0.958	-2.545	-2.563	-2.213
Spouses' <i>Hukou</i> Statuses		X	X		X	X		X	X
Spouses' Education		X	X		X	X		X	X
Province Fixed Effects			X			X			X
Observations	1,187	1,183	1,183	729	725	725	1,182	1,179	1,179
R^2	0.049	0.051	0.082	0.034	0.036	0.087	0.019	0.022	0.084

Note: Standard errors in brackets and errors are clustered at the household level. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The dependent variable of time on chores and the explanatory variable of the values of dowry are all transformed with the Inverse Hyperbolic Sine (IHS) function. Both spouses' education and *hukou* variables are dummy variables. For education, the variable is 1 if the individual has finished high school and 0 if they never have. For *hukou*, the variable is 1 if they hold an urban *hukou* and 0 if they do not.

Table 3: Reduced-form Evidence: Effect of The Marriage Law Amendment on Marriage Payments

	Dependent variable:					
	Bride price (log)	Bride price	Dowry (log)	Dowry	Dowry-to-income	Dowry-to-bride price
	(1)	(2)	(3)	(4)	(5)	(6)
RDD estimand	0.203* (0.122)	2,242.983** (971.448)	0.232* (0.138)	1,213.899** (583.456)	1.074*** (0.393)	0.075* (0.045)
Observations	1,461	1,461	1,207	1,207	804	1,032
R^2	0.335	0.343	0.292	0.299	0.031	0.009

Note: Standard errors in brackets. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The dependent variables in columns 1 and 3 are the bride price and dowry transformed with the Inverse Hyperbolic Sine (IHS) function. The dependent variables in columns 2 and 4 are the actual amounts of the bride price and dowry. The dependent variable in column 5 is the ratio of the dowry to the income of the bride (CPI adjusted). The dependent variable in column 6 is the ratio of the dowry to the bride price. The cutoff point is the year 2001 when the marriage law amendment was implemented. All six columns utilize local linear regression and triangular kernel. The Bandwidth type is chosen based on the method proposed by [Imbens & Kalyanaraman \(2012\)](#).

Table 4: Policy Manipulation Test

<i>Variables:</i>	Year of the wedding	
Number of observations	1,461	
Cutoff = 0	Left of Cutoff	Right of Cutoff
Number of observations	1,076	385
Order est. (p)	2	2
Order bias (q)	3	3
Method: robust	T	$P > T $
	3.8378	1e-04

Note: The cutoff point is the year 2001 when the marriage law amendment was implemented. The test is based on the local polynomial density estimator proposed in [Cattaneo et al. \(2020, 2021\)](#). The kernel used in the test is triangular. The VCE method is jackknife.

Table 5: Robustness Test on the Effect of the Marriage Law Amendment on Marriage Payments: Donut RDD

<i>Dependent variable:</i>						
	Bride price (log)	Bride price	Dowry (log)	Dowry	Dowry-to-income	Dowry-to-bride price
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Sample: One year on each side excluded</i>						
RDD estimand	0.251* (0.137)	3,048.888*** (1,070.960)	0.273* (0.156)	1,291.790** (653.684)	1.153*** (0.447)	0.098* (0.051)
Observations	1,395	1,395	1,148	1,148	759	980
R^2	0.339	0.353	0.296	0.305	0.033	0.011
<i>Sample: Two years on each side excluded</i>						
RDD estimand	0.365** (0.153)	4,237.120*** (1,182.938)	0.323* (0.175)	1,760.606** (728.923)	1.226** (0.512)	0.099* (0.057)
Observations	1,339	1,339	1,097	1,097	722	938
R^2	0.346	0.367	0.302	0.315	0.033	0.010

Note: Standard errors in brackets. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The dependent variables in columns 1 and 3 are the bride price and dowry transformed with the Inverse Hyperbolic Sine (IHS) function. The dependent variables in columns 2 and 4 are the actual amounts of the bride price and dowry. The dependent variable in column 5 is the ratio of the dowry to the income of the bride (CPI adjusted). The dependent variable in column 6 is the ratio of the dowry to the bride price. All six columns utilize local linear regression and triangular kernel. The Bandwidth type is chosen based on the method proposed by [Imbens & Kalyanaraman \(2012\)](#).

Table 6: Robustness Test on the Effect of Exposure to the WTO

	<i>Dependent variable:</i>			
	Bride price	Dowry	Dowry-to-income	Dowry-to-bride price
	(1)	(2)	(3)	(4)
<i>Sample: More exposed to the WTO</i>				
RDD estimand	384.924	412.788	0.882*	0.117*
	(1,397.258)	(824.888)	(0.507)	(0.062)
Observations	722	579	370	496
R^2	0.361	0.309	0.035	0.030
<i>Sample: Less exposed to the WTO</i>				
RDD estimand	3,920.046***	1,836.995**	0.732	0.030
	(1,319.087)	(799.010)	(0.588)	(0.066)
Observations	739	628	434	536
R^2	0.339	0.292	0.028	0.002
p-value (coefficient diff.)	0.066	0.215	0.847	0.334

Note: Standard errors in brackets. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The top four columns use the sample from provinces that are more exposed to China's entry into the WTO (on December 11th, 2001). The bottom four columns use the sample from provinces that are less exposed to China's entry into the WTO. The classification is according to [J. Han et al. \(2012\)](#), in which they treat coastal provinces with ports as the more exposed group. The dependent variables in column 1 are the actual amounts of the bride price. The dependent variables in column 2 are the actual amounts of the dowry. The dependent variables in column 3 are the ratios of the dowry to the income of the bride (CPI adjusted). The dependent variables in column 4 are the ratios of the dowry to the bride price. The cutoff point is the year 2001, when the marriage law amendment was implemented. All four columns utilize local linear regression and triangular kernel. The Bandwidth type is chosen based on the method proposed by [Imbens & Kalyanaraman \(2012\)](#). The bottom row presents the p-values from the Wald test between the coefficients from the two groups.

Appendix

Appendix A: Theoretical Appendix

A.1. The Relationship between Bride Price and Bride's Family's Utility

$$\frac{\partial \log(U_m^F)}{\partial B} = \gamma \left\{ \delta_1 \frac{1}{W^F + B - D} \left(1 - \frac{\partial D}{\partial B} \right) + (1 - \delta_1) \frac{1}{c_m^F} \left[-\delta_3' \frac{\partial D}{\partial B} (w^M + w^F + D) + (1 - \delta_3) \frac{\partial D}{\partial B} \right] \right\} \quad (\text{A1})$$

Since $-\delta_1 \frac{1}{W^F + B - D} + (1 - \delta_1) \frac{1}{c_m^F} [-\delta_3' (w^M + w^F + D) + (1 - \delta_3)] = 0$

and $\frac{\partial \log(U_m^F)}{\partial B} = \gamma \delta_1 \frac{1}{W^F + B - D} > 0$,

$$\frac{\partial \log(U_m^F)}{\partial B} > 0$$

A.2. Implication of the Three-agent Model under Equilibrium

This part provides detailed solutions to the discussions of the implications of the equilibrium of the three-agent models.

The rule deciding the dowry amount given any bride price can also be written as:

$$-\frac{\delta_1}{W^F + B - D} - \frac{(1 - \delta_1)\delta_3'}{1 - \delta_3} + \frac{1 - \delta_1}{w^M + w^F + D} = 0 \quad (\text{A2})$$

Take partial differential with respect to the bride price (D is a function of B):

$$\frac{\delta_1}{(W^F + B - D)^2} = \left\{ \frac{\delta_1}{(W^F + B - D)^2} + (1 - \delta_1) \left[\frac{\delta_3''(1 - \delta_3) + (\delta_3')^2}{(1 - \delta_3)^2} \right] + \frac{1 - \delta_1}{(w^M + w^F + D)^2} \right\} \frac{\partial D}{\partial B} \quad (\text{A3})$$

$\frac{\partial D}{\partial B} > 0$. This indicates that given the exogenous variables set, a higher bride price also means a high dowry payment.

I assign a detailed function form to the bargaining weight δ_3 . Notice that the specification does not deliver an explicit function form of dowry but helps to simplify the analysis. The function form also meets the first and second-order:

$$\delta_3 = \frac{1}{1 + \alpha_0 + \alpha_1 D} \quad \alpha_0, \alpha_1 > 0 \quad (\text{A4})$$

$$\delta'_3 = -\frac{\alpha_1}{(1 + \alpha_0 + \alpha_1 D)^2} < 0 \quad (\text{A5})$$

$$\delta''_3 = \frac{2\alpha_1^2}{(1 + \alpha_0 + \alpha_1 D)^3} > 0 \quad (\text{A6})$$

This results in a detailed dowry rule as below.

$$-\frac{\delta_1}{W^F + B - D} + \frac{(1 - \delta_1)\alpha_1}{(\alpha_0 + \alpha_1 D)(1 + \alpha_0 + \alpha_1 D)} + \frac{1 - \delta_1}{w^M + w^F + D} = 0 \quad (\text{A7})$$

We can notice the LHS's value is monotonically increasing with the increase of B . This indicates that given the exogenous variables W^F , w^M , and w^F , a D corresponds to a single B value.

The following subsections correspond to the proofs of the four propositions. In addition, I define the following consumption values as the outside options:

$$u_1^F(\bar{c}_1^F) = \bar{u}_1^F, \quad u_2^F(\bar{c}_2^F) = \bar{u}_2^F, \quad u_1^M(\bar{c}_1^M) = \bar{u}_1^M, \quad u_2^M(\bar{c}_2^M) = \bar{u}_2^M \quad (\text{A8})$$

and $\bar{c}_1^M < W^M$.

A.2.1.1. A negative bride price $B < 0$

Intuitively, patrilocality means the groom's family gains from getting a daughter-in-law. Thus, a negative value of "bride price" could further make the marriage more attractive to them. However, for the bride's family, a negative value of "bride price" means they will further lose wealth after the leave of their daughter. This will make the condition difficult to hold.

From the view of the bride's family's utility, transferring wealth (negative "bride price") does not benefit either their own or their daughter's consumption. The spouses' consumption is not influenced by the bride price but only the dowry. Thus we have no change in the bride's consumption regardless of the bride price amount. The inequation below holds when the "bride price" is negative:

$$\log(\xi^F) + \gamma[\delta_1 \log(W^F - D) + (1 - \delta_1) \log(c_m^F)] \geq \log(\xi^F) + \gamma[\delta_1 \log(W^F + B - D) + (1 - \delta_1) \log(c_m^F)]$$

when $B < 0$

(A9)

Hence, the only reason why the bride's family could possibly pay the groom's family is that the outside option for the groom's family is larger than marrying off their son.

$$\log(\xi^M) + \gamma\{\delta_2 \log(W^M - B) + (1 - \delta_2) \log[\delta_3(w^M + w^F + D)]\} < \gamma[\delta_2 \log(\bar{c}_1^M) + (1 - \delta_2) \log(\bar{c}_2^M)] \quad (\text{A10})$$

In this case, the equation above can be rewritten as:

$$\gamma(1 - \delta_2) \log\left[\frac{\bar{c}_2^M}{\delta_3(w^M + w^F + D)}\right] > \gamma \delta_2 \log\left(\frac{W^M - B}{\bar{c}_1^M}\right) + \log(\xi^M) \quad (\text{A11})$$

Since the RHS is positive, the inequation holds only if the groom's consumption is worse off due to the marriage. This already contradicts the presumption that the marriage benefits both spouses. In the case of a negative "bride price", the reservation bride price needs to be larger than the outside option.

$$\log(\xi^F) + \gamma[\delta_1 \log(W^F + B - D) + (1 - \delta_1) \log(c_m^F)] \geq \gamma[\delta_1 \log(\bar{c}_1^F) + (1 - \delta_1) \log(\bar{c}_2^F)] \quad (\text{A12})$$

Suppose $B < 0$, $D \geq 0$, and $W^F + B - D > 0$, a negative bride price means that the gain for the bride has to justify both the loss of wealth and the leave of the daughter.

$$\log(c_m^F) - \log(\bar{c}_2^F) \geq \frac{\delta_1}{1 - \delta_1} [\log(\bar{c}_1^F) - \log(W^F + B - D)] - \frac{1}{\gamma(1 - \delta_1)} \log(\xi^F) \quad (\text{A13})$$

This can be rewritten as:

$$\frac{\frac{\alpha_0 + \alpha_1 D}{1 + \alpha_0 + \alpha_1 D} \frac{w^M + w^F + D}{\bar{c}_2^F}}{\left[\frac{1 - \delta_1}{\delta_1} \bar{c}_1^F \left(\frac{\alpha_1}{(\alpha_0 + \alpha_1 D)(1 + \alpha_0 + \alpha_1 D)} + \frac{1}{w^M + w^F + D} \right) \right]^{\frac{\delta_1}{1 - \delta_1}}} \geq \exp\left[-\frac{1}{\gamma(1 - \delta_1)} \log(\xi^F) \right] \quad (\text{A14})$$

The RHS is a constant between 0 and 1. Inequality is more easily achieved when the spouses—especially

the bride—have high incomes, and the dowry is high. The LHS is monotonically increasing with w^F . When w^F is close to infinite, the LHS is also approaching infinite. Thus, there exists a \bar{w}^F that

$$\frac{\frac{\alpha_0 + \alpha_1 D}{1 + \alpha_0 + \alpha_1 D} \frac{w^M + \bar{w}^F + D}{\bar{c}_2^F}}{\left[\frac{1 - \delta_1}{\delta_1} \bar{c}_1^F \left(\frac{\alpha_1}{(\alpha_0 + \alpha_1 D)(1 + \alpha_0 + \alpha_1 D)} + \frac{1}{w^M + \bar{w}^F + D} \right) \right]^{\frac{\delta_1}{1 - \delta_1}}} = \exp \left[- \frac{1}{\gamma(1 - \delta_1)} \log(\xi^F) \right] \quad (\text{A15})$$

The bride's income needs to be at least as high as \bar{w}^F . Considering that these two conditions contradict the condition on the groom's side, achieving the situation of a negative “bride price” is impossible.

A.2.1.2. No transfers between the two families on the two sides $B = 0$ and $D \geq 0$

If $B = 0$:

$$\log(\xi^M) + \gamma(1 - \delta_2) \log \left[\frac{\delta_3(w^M + w^F + D)}{\bar{c}_2^M} \right] = \gamma \delta_2 \log \left(\frac{\bar{c}_1^M}{W^M} \right) \quad (\text{A16})$$

Since $LHS > 0$ and $RHS < 0$, the equality will not hold.

Let $g(D) = -\frac{\delta_1}{W^F + B - D} + \frac{(1 - \delta_1)\alpha_1}{(\alpha_0 + \alpha_1 D)(1 + \alpha_0 + \alpha_1 D)} + \frac{1 - \delta_1}{w^M + w^F + D}$. $g'(D) < 0$. Thus, when B is zero, there exists a positive value of dowry only if $-\frac{\delta_1}{W^F} + \frac{(1 - \delta_1)\alpha_1}{\alpha_0(1 + \alpha_0)} + \frac{1 - \delta_1}{w^M + w^F} > 0$. In other words, we will see a positive value of dowry given a zero bride price only if the bride's family is relatively wealthy and both spouses have low incomes. With the two conditions above, it is impossible to achieve them simultaneously.

A.2.1.3. A positive value of the bride price but no dowry $D = 0$ and $B > 0$

If $D = 0$:

Similar to the analysis above, the function of the dowry rule [A7](#) will satisfy:

$$-\frac{\delta_1}{W^F + B} + \frac{(1 - \delta_1)\alpha_1}{\alpha_0(1 + \alpha_0)} + \frac{1 - \delta_1}{w^M + w^F} \leq 0 \quad (\text{A17})$$

The inequality is more easily achieved when $W^F + B$ is small and $w^M + w^F$ is large. This means a relatively poor bride's family—even after the reception of a bride price—but a high-income couple. This can be rewritten as:

$$W^F \leq \frac{\delta_1}{\frac{1 - \delta_1}{w^M + w^F} + \frac{(1 - \delta_1)\alpha_1}{\alpha_0(1 + \alpha_0)}} - B \quad (\text{A18})$$

Since when $D = 0$, the bride price B is not correlated with the wealth of the bride's family anymore, the

RHS is a constant given a set of w^M , w^F , and W^M . Thus, if the bride's family's wealth is below the RHS value, they will not transfer any to their daughter. In addition, to ensure a positive bride price, the following condition has to be met:

$$\log(\xi^M) + \gamma(1 - \delta_2)\log\left(\frac{\delta_3(w^M + w^F)}{\bar{c}_2^M}\right) > 0 \quad (\text{A19})$$

Since $\log(\xi^M) > 0$, the condition is not impossible to achieve even if the bride's income is low.

A.2.1.4. A higher value of the dowry than the bride price $D > B$

When $D > B$, we can easily get the inequation below from the dowry rule [A7](#):

$$\frac{(1 - \delta_1)\alpha_1}{(\alpha_0 + \alpha_1 D)(1 + \alpha_0 + \alpha_1 D)} + \frac{1 - \delta_1}{w^M + w^F + D} = \frac{\delta_1}{W^F + B - D} > \frac{\delta_1}{W^F} \quad (\text{A20})$$

The inequation holds when the bride's family is wealthy and the couple's income is comparatively low. This leads to the condition:

$$W^F > \frac{\delta_1}{\frac{(1 - \delta_1)\alpha_1}{(\alpha_0 + \alpha_1 B)(1 + \alpha_0 + \alpha_1 B)} + \frac{1 - \delta_1}{w^M + w^F + B}} \quad (\text{A21})$$

In addition, the groom's family's side derives the inequation as below:

$$\log(\xi^M) + \gamma\{\delta_2\log(W^M - B) + (1 - \delta_2)\log[\delta_3(w^M + w^F + B)]\} < \gamma[\delta_2\log(\bar{c}_1^M) + (1 - \delta_2)\log(\bar{c}_2^M)] \quad (\text{A22})$$

When the LHS equals RHS, the value of B is the solution to the RHS of [A21](#). The inequation can also be rewritten as:

$$\log(\xi^M) + \gamma\delta_2\log\left(\frac{W^M - B}{\bar{c}_1^M}\right) < \gamma(1 - \delta_2)\log\left[\frac{\bar{c}_2^M}{\delta_3(w^M + w^F + B)}\right] \quad (\text{A23})$$

Combined with the previous results, we know that $D > B$ also happens because of a less wealthy groom's family and a low bride price.

A.2.2. Patrilocality and bride price

The bride price rule with the explicit function form of the Pareto weights is written as:

$$\log(\xi^M) + \gamma\{\delta_2\log(W^M - B) + (1 - \delta_2)\log[\delta_3(w^M + w^F + D)]\} = \gamma[\delta_2\log(\bar{c}_1^M) + (1 - \delta_2)\log(\bar{c}_2^M)] \quad (\text{A24})$$

or:

$$\log(\xi^M) + \gamma\delta_2\log\left(\frac{W^M - B}{\bar{c}_1^M}\right) = \gamma(1 - \delta_2)\log\left[\frac{\bar{c}_2^M}{\delta_3(w^M + w^F + D(B))}\right] \quad (\text{A25})$$

The LHS is a function monotonically decreasing with the increase in bride price. Under the assumption, the RHS normally decreases with the amount of dowry. When either side is wealthy enough, the RHS starts to increase after reaching the turning point. However, regardless of the shape of the RHS, higher patrilocality (a larger value of the constant $\log(\xi^M)$) would always result in a higher value of bride price.

A.2.3. Positive shock to the value of dowries

This part presents theoretical evidence of how the bride price and dowry change with an exogenous shock that brings extra value to the dowry. Considering the form of the Pareto weight, we can interpret the exogenous shock at a constant gain (higher α_0) or a higher marginal gain from the dowry (higher α_1). However, either of the changes would lead to the same result on the dowry rule: for a fixed amount of bride price, the dowry will decrease. This is because the bride's family only needs a smaller amount of wealth transfer to maintain the same level of bargaining power for their daughter.

Next, we can again look at the bride price rule under the updated dowry rule. For the groom's side, the final rule for the groom's family is that they always get the utility the same as the outside option (\bar{U}_s^M). However, we can not directly tell the changing direction of the bride price. Consider the bride price rule:

$$\log(\xi^M) + \gamma\left\{\underbrace{\delta_2\log(W^M - B)}_{\text{Part A}} + \underbrace{(1 - \delta_2)\log[\delta_3(w^M + w^F + D)]}_{\text{Part B}}\right\} = \underbrace{\log(\bar{U}_s^M)}_{\text{Outside option (constant)}} \quad (\text{A26})$$

When the bride price increases, Part A will decrease. However, the amount of dowry and the consequent bargaining power is uncertain, depending on the parameters' values. Hence, Part B may increase. In other words, the consumption of the groom: $[\delta_3(w^M + w^F + D)] = \frac{w^M + w^F + D}{1 + \alpha_0 + \alpha_1 D}$ should increase. In this case, the only outcome would be that the dowry D also increases. If D instead decreases, $1 + \alpha_0 + \alpha_1 D$ should also decrease. However, this would contradict the dowry rule. Thus, the only possible case is that the dowry amount also increases.

If the bride price goes down, Part A will increase. Depending on the effect of the amendment, dowries could change in different directions. When the effect is reflected as a constant gain (an increase in α_0), the only possible direction is a decrease in dowries. However, if the effect increases the marginal value of dowries (higher α_1), there can be two directions. Generally, this would result in a decrease in dowries as well. An increase in dowries can be seen if the original dowry value is very low and the effect on the marginal value of dowries is large. In the actual situation, this can only mean a zero payment of dowry before the amendment and an incentive for the bride's family to transfer a small amount of dowry. Thus, this aligns with the previous discussion about the zero payment of dowry and is not a typical case. Under these two conditions, the bargaining power will also decrease, and Part B will drop. To conclude, only two main conditions can make the equation above hold that the two prices must change in the same direction.

Even theoretically, the two price rules hold in both cases; the parameters decide which direction is more likely to occur in what circumstance. The dowry rule decides that a household with high inequality where a bride has lower bargaining power (compared with other brides) tends to see the dowry goes up and vice versa. To simplify the proof, I assume the positive shock is on α_0 . In this case, a higher α_0 reflects higher bargaining power for the bride, and the value further increases after the shock. For the dowry rule, the first term $\frac{(1-\delta_1)\alpha_1}{(\alpha_0+\alpha_1D)(1+\alpha_0+\alpha_1D)} + \frac{1-\delta_1}{w^M+w^F+D}$ reflects the marginal benefit of wealth transfer to the bride and the second term $\frac{\delta_1}{W^F+B-D}$ reflects the marginal benefit to the parents of saving wealth for their own consumption. The income effect is reflected in a decrease in D ; the decrease is larger when the inequality is high (α_0 is small). The substitution effect is reflected in an increase in D .

Suppose α_0^* is the value after the shock, D^* is the solution for the income effect:

$$\frac{(1-\delta_1)\alpha_1}{(\alpha_0^*+\alpha_1D^*)(1+\alpha_0^*+\alpha_1D^*)} + \frac{1-\delta_1}{w^M+w^F+D^*} = \frac{\delta_1}{W^F+B-D^*} \quad (\text{A27})$$

where $D^* < D$, and $D - D^*$ is the reduction resulting from the income effect. The change of D will also lead to a change of B . B^* is the solution to the new indifference condition for the groom's family. $D^{**} = D$ presents the values of α_0^* and α_0 that result in no change of the dowry.

$$\log(\xi^M) + \gamma\{\delta_2\log(W^M - B^*) + (1-\delta_2)\log[\delta_3^*(w^M + w^F + D^*)]\} = \gamma[\delta_2\log(\bar{c}_1^M) + (1-\delta_2)\log(\bar{c}_2^M)] \quad (\text{A28})$$

Since the change of the value of δ_3^* is uncertain, B^* can be either larger or smaller than B . When the household is unequal, α_0 is small and $D - D^*$ will be large resulting from the increased α_0^* . This leads to a large increase in δ_3 , which results in a higher $\delta_3^*(w^M + w^F + D^*)$. Thus, B^* is larger than B . When the bride's

bargaining power is high, $\delta_3^*(w^M + w^F + D^*)$ will decrease and B^* is smaller than B .

D^{**} is an increase from D^* due to the substitution effect. Suppose B^{**} is the solution for the substitution effect:

$$\frac{(1 - \delta_1)\alpha_1}{(\alpha_0^* + \alpha_1 D^{**})(1 + \alpha_0^* + \alpha_1 D^{**})} + \frac{1 - \delta_1}{w^M + w^F + D^{**}} = \frac{\delta_1}{W^F + B^{**} - D^{**}} \quad (A29)$$

Because of the consistency of changes of directions between B and D , B^{**} is large than B if $D^{**} - D^*$ is larger than $D - D^*$, and smaller than B if $D^{**} - D^*$ is smaller than $D - D^*$. When

To conclude, when the household is unequal, the inequation $\delta_3^*(\alpha_0^*) \cdot (w^M + w^F + D^*) > \delta_3(\alpha_0) \cdot (w^M + w^F + D)$ will hold true (D^* is the solution from A27), and both the bride price and dowry will increase, and vice versa.

Appendix B: Empirical Appendix

B.1. Patrilocality and Bride Price

This part examines the relationship between the levels of patrilocality and the bride price. Since patrilocality is a major factor resulting in the payment of the bride price and a higher degree of patrilocality (in terms of the gain of utility for the groom's family) is positively correlated with the bride price asked by the bride's family, the critical part of the discussion is the find proxies for the levels of patrilocality.

To proxy the levels of patrilocality, I use the distance between the wife's original and current places and the frequency of the wife's visits to her maiden family each year. A longer physical distance between the wife's natal and current families reflects the patrilocality on both families' sides. If a wife lives far from her natal family, her family will experience a larger loss as it is hard for her to contribute to the production. Meanwhile, this forces her to integrate into her husband's family and the local society, which results in a higher chance that she could contribute more to the production. Similar to the distance but more straightforward, the frequency of visiting her natal family indicates whether she contributes more to her natal or her husband's family.

For the distance measurement, I adopt the direct geographic distance between the city the wife currently lives in and the city where she was born or the city where she was fourteen years old. The survey also selected a portion of the sample for an extended version that asked about their routines. These included the frequency of visiting their parents if the individual lives in a different location than their parents. In the following regressions, I use the number of days the wife usually visits in a year and the times she visited last year. The basic specification is below:

$$Bride\ Price_{i,t} = \beta_{B6} + \beta_{B7} Patri_{i,t} + \beta_{B8} X_{i,t} + \varepsilon_{i,t} \quad (A30)$$

$Patri_{i,t}$ is one of the four proxies for the levels of patrilocality, and $X_{i,t}$ is the control variable that varies for the two proxies where I either control the income levels or the provincial and wedding year fixed effects. Table A1 below presents the results.

[Insert Table A1 here]

The first four columns present the regression results proxied with the geographic distances. The second and fourth columns further control the income of the two spouses. The last two columns show the results where the visiting frequencies are the indicator for patrilocality. The results estimated with the distance proxy at different ages do not display a large difference. Considering the low mobility in the society, especially due to the *hukou* policy, a minor difference is expected. A 10% increase in the physical distance is associated with one percent higher bride price. Additionally, it is more common to have a marriage between two people from the same location (a zero physical distance under the specification). A groom marrying a bride from another town sees 1.5 times higher bride price on average. Consistent conclusions can be found when patrilocality is proxied by the frequency of the wife visiting her natal family. The more she visits her parents, the stronger connection she maintains with her maiden family, and less contribution to her spouse's. A 10% increase in her frequency of visiting her maiden family is reflected in a 4% less bride price.

B.2. The Direct Effect of the Marriage Law Amendment

The primary test indicates a result of increasing marriage payments. The first concern could come from the baseline assumption if there is an increased value of dowry. Since the value is not possible to measure directly, I adopt the house purchasing behavior of the couple as the proxy to reflect the direct effect of the amendment. Purchasing a house is an essential goal for Chinese people, and ownership of houses has led to many disputes in divorce cases. Thus, if the hypothesis is correct that the amendment helps to clarify the ownership of property, this will ease the concern of the couple in house purchasing. Thus, I look into the waiting time between wedding the house purchasing. With the clarification of the property ownership, we can expect the waiting time shortens after the amendment. Figure A1 below shows the trend of the waiting time between the year of purchasing houses and the wedding year.¹⁹

¹⁹I utilize the data since 1982. House ownership was a part of the planned economy before 1980. *Outline of the Report of the National Conference on Capital Construction* in 1980 proposed commercialization of the housing market. Between 1980 and 1982, commercialization was conducted in part of China. The experiment stopped in 1982, and the mortgage loan was formerly introduced in that year as well.

[Insert Figure A1 here]

The gradual relaxation of the housing market and the growth of wealth in society result in a downward trend of waiting time. However, Not only can we observe a discontinuity but also an accelerated downward trend. Table 5 below presents the RDD estimation results.

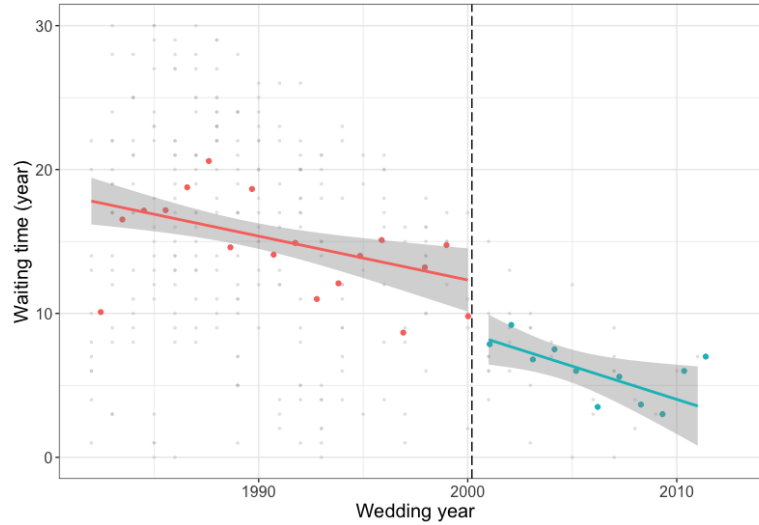
[Insert Table A2 here]

The RDD estimation indicates a significant negative discontinuity in 2001, led by the marriage law amendment. The average waiting time between purchasing a house and wedding was shortened by 3.7 years, which is a 25% reduction.²⁰ Even though the market has continuously seen the worsening housing affordability(C. Zhang et al., 2016), this reflects a relief of the concern regarding the ownership of houses for people. In comparison, prior to the amendment, couples may need more time to establish trust or find methods to solve disputes regarding ownership should divorces happen.

²⁰Another around 6% households in the sample purchased their houses before the marriage and are not taken into account in the analysis.

Appendix Figures

Figure A1: Relationship between wedding year and the waiting time of purchasing houses



Note: This figure demonstrates the time trend of the waiting time between purchasing a house and the wedding from 1982 to 2018. The sample is from the 2018 China Labor force Dynamics Surveys (CLDS). The sample size is 301. The vertical axis is the waiting time between purchasing the house and the wedding year (year). The horizontal axis stands for the years when the couples got married. The cutoff line is the year 2001. The data is winsorized at the 0.5% level at both the top and bottom.

Appendix Tables

Table A1: Reduced-form Evidence I: Relationship between Bride Price and Patrilocality

	Dependent variable: Bride price					
	(1)	(2)	(3)	(4)	(5)	(6)
City distance	0.101*** (0.022)	0.078*** (0.024)				
City Distance at 14			0.112*** (0.023)	0.090*** (0.025)		
Times visit					-0.404** (0.187)	
Times visited last year						-0.423** (0.173)
Groom's Income		X		X		
Bride's Income		X		X		
Province Fixed Effects					X	X
Wedding Year Fixed Effects					X	X
Observations	1,390	1,073	1,391	1,075	108	107
R^2	0.015	0.068	0.017	0.070	0.511	0.510

Note: Standard errors in brackets and errors are clustered at the household level. * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level. The dependent variable bride prices are transformed with the Inverse Hyperbolic Sine (IHS) function. Explanatory variable City distance measures the distance between the wife's current home and her birthplace. Explanatory variable City distance at 14 measures the distance between the wife's living place at 14 years old and her birthplace. The explanatory variable Times visit is the average number of the wife visiting her marital family. Explanatory variable Times visit last year is the number that the wife visited her marital family last year. Wedding year fixed effects indicate the year ranges in which the couple got married. They are the 1970s, 1980s, 1990s, and 2000s.

Table A2: Robustness Test on the Efficiency of the Marriage Law Amendment

	Dependent variable: Waiting time (year)	
	(1)	(2)
RDD estimand	-3.842* (2.164)	-3.734* (2.166)
Bride marriage age		X
Observations	301	301
R^2	0.175	0.178

Note: Standard errors in brackets. * significant at the 10% level. The dependent variable is the gap between the year of purchasing the house and the wedding year. Both columns utilize local linear regression and triangular kernel. The Bandwidth type is chosen based on the method proposed by [Imbens & Kalyanaraman \(2012\)](#).