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Marriage Payments and Wives' Welfare: All you need is love

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Keywords: Bride Price, Marriage, Women, Senegal



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Abstract

Bride price is essential to marriage in West Africa, and its impact on wives' well-being in their marital life is debated. According to our data from Senegal, transfers to the family of the bride characterize approximately 85% of marriages. Furthermore, although this feature is largely ignored in the literature, those marriages are also characterized by the simultaneous existence of other marriage payments, which flow in different directions between the stakeholders. This paper studies the relationship between these multiple marriage payments and the well-being of the wife in her household. We use a unique survey that enquires separately about the different types of marriage payments. We highlight the strength of the link between what is given to the bride herself and her welfare, as opposed to the looseness of the relation between this welfare and what is given to her family.

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1 Introduction

In Senegal, marriage is nearly universal for women, and the social pressure to be married is extremely strong. Marriage and motherhood are important components of women's social status and an essential part of their lives. Therefore, their welfare within marriage is a crucial aspect of women's well-being. Marriage payments are pervasive in this country, with bride prices being the most important. According to our data, 85% of marriages that occurred between 1996 and 2006 involved a bride price. Bride prices exist in other contexts, as they are, for example, the main form of marriage payments in rural China, Thailand, Sub-Saharan African and Middle-Eastern countries (Anderson, 2007); however, this common denomination hides major contextual variations in this practice.

There is an ongoing debate on the link between bride prices and married women's welfare. In 2004, the International Conference on Bride Price, organized by MIFUMI, which is a women's rights NGO based out of Kampala, Uganda, took a clear stands against the practice. This conference concluded by forming a resolution stating that the bride price practice should be banned, as it is akin to the purchasing of women who therefore lose all agency in regard to their fertility and sexuality (Wendo (2004)). A contrary assessment of the practice suggests that since the bride price is paid when the wife has a positive value, it could reflect her bargaining power in her household and thus positively influence her access to the household resources and her childrens' outcomes.¹

In this paper, we set out to elucidate the relationship between marriage payments and married women's welfare in the case of Senegal. In this context, several payments take place at the time of marriage, which flow in different directions between the stakeholders. We address the question of whether any of these payments are correlated with wives' welfare, and we propose a conceptual framework to help understand the mechanisms at play.

Bride price is a transfer from the family of the groom to the family of the bride.² It has been studied in social sciences, in particular through its ceremonial function and mostly by the

¹For studies on the impact of mother's bargaining power on children outcomes, see Doss (1996), Duflo (2003) and Lépine and Strobl (2013).

²The word bridewealth is sometimes used because it does not carry as much stigma as wife purchasing within a transaction. Nevertheless, the transfer between the groom's kin and the bride's kin is not necessarily a transfer of wealth, as it does not inevitably consist of assets that could generate a future income flow. Instead, it might instead be consumption goods purchased with the product of labour (see, for example, Bell (2008) for a discussion of this distinction). In this paper, we will use the term bride price.

anthropological literature (Drucker (1965), Kressel (1977)). The practice characterizes marriage markets where the search for a spouse is generally conducted by the groom's side, with the groom and his kin trying to find the most desirable match. In marriage markets where dowries prevail, the search is typically conducted by the bride's side. The literature has devised models to explain the existence of such payments. The bride price is seen as compensation for the bride's parents, who are facing the loss of their daughter who represents an asset, or as compensation for the bride herself (Becker, 1991). The role of women in agricultural labour-intensive societies is often put forward to explain the prevalence of bride price over dowries in those societies, where it amounts to a payment for the transfer of the woman's workforce and the rights to her fertility from her parents' to her husband's household (Bell (2008), Boserup et al. (2013), Falen (2011)).

There are a number of reasons why bride prices could affect the wellbeing of women in their marriage. The idea that bride prices disenfranchise women is echoed in the economic literature, in particular regarding Uganda, by papers stressing the negative impact of bride prices on women's independence and their household decision-making role (Kaye et al., 2005). Gaspart and Platteau (2010) stress another channel for a potential negative impact of the bride price on wives' welfare. In the context they study (i.e., the River Valley in Senegal), the bride price might have to be returned if the woman leaves the relationship early in the marriage. The strategic model the authors develop implies that a high bride price increases the groom's incentive to push his wife to ask for divorce, potentially using violence to achieve this end. The fact that the bride price could eventually be repaid is also present in the Ugandan context, where, according to the work of Bishai and Grossbard (2010), the practice limits the wife's incentive to have extramarital affairs. Finally, in the recent economic literature, Corno and Voena (2016) and Corno et al. (2020) have shown, using data from several countries in Africa, that the probability of having an early marriage is higher in the case of negative shocks on family income among societies that practise bride prices. Early marriage could be a way for families to smooth consumption, thanks in part to the receipt of the bride price.

When perceived as favorable, a bride price might at times be used as a proxy for bargaining power, either because it is viewed as a substantial amount earned by the woman, who can then participate in her own empowerment, or because it reflects the woman's positive value for the

husband (Doss (2013)). In contrast, in the Beckerian model, dowries are negatively correlated with wives' welfare, as they exist when the value of the wives is negative. Consistent with this view, Mbaye and Wagner (2017) find that a higher bride price reduces fertility pressure in rural areas of Senegal. In a different setting, Mansoor (2018) also finds that a higher bride price increases the probability of modern contraceptive use, which is interpreted as a sign of a higher bargaining power for women. In addition, Ashraf et al. (2020) show that in Indonesia and Zambia, the construction of schools has increased the education of girls belonging to ethnic groups practising high bride prices. Parents' strategic decisions regarding their daughters' marriage, aiming at affecting the timing or amount of the bride price, can therefore have positive as well as negative impacts. Finally, in the context of the DRC, Lowes and Nunn (2017) show no systematic link between the amount of bride prices and earlier marriage or higher fertility.

Dowry and bride price can be contrasted by the identity of the recipient of the transfer. A dowry can be seen as a pre-mortem inheritance and a way for parents to transmit an inheritance to their daughter in the context of patrilocality (Goody and Tambiah, 1973), while a bride price goes to the parents of the bride. Chan and Zhang (1999) therefore suggest that only the dowry and not the bride price should impact the intrahousehold allocation of resources; they implicitly highlight the fact that the dowry being retained (at least in part) by the wife, contrary to the bride price, does not affect her utility in the same way.

In total, the issue of how bride price relates to the bride's wellbeing is still an open question and might well depend on the context.

In Senegal, bride price is the main type of marriage payment. Formally given by the groom and the groom's family to the bride's parents, it is the most systematic payment, but other transfers between the various parties are also commonly observed. Two important components of these transfers concern the bride herself. She receives a transfer from her husband, which will be hereafter referred to as *le cadeau* (i.e., the gift), as it is called in French, and she brings into the household a certain amount of resources, akin to a wedding trousseau (*le bagage*). It can therefore be expected that these marriage payments could relate differently to the wife's welfare; thus, that considering each of them separately seems necessary.

Marriage payments have rarely been analysed in their full complexity, at least by economists.

Indeed, although a significant literature on dowries and bride prices exists, the fact that marriages often give rise to several simultaneous payments (this is, for example, true also in Pakistan or Bangladesh, as presented by Ambrus et al. (2010)) is scarcely ever taken into account. This paper fills in part of this gap.

In this paper, we use proxies for the wife’s wellbeing, ranging from individual consumption to fertility pressure. We assess the links between the diverse marriage payments and those outcomes. This is made possible due to the use of original data from the survey ”Pauvreté et Structure Familiale” (PSF), which was collected in Senegal in 2006 (de Vreyer et al., 2008). These data are particularly well suited for our objective because they provide detailed information on transfers at the time of marriage for every unbroken marriage; the bride price, the *cadeau* and the *bagage* are precisely recorded. They also provide information on consumption at the disaggregated within-household level, allowing in particular the distinguishment of the consumption accruing to the wife from that of her husband.

This paper allows us to dig deeper into the question of the link between marriage payments and intrahousehold resource allocation. To the best of our knowledge, our work is one of the first to detail the different transfers occurring at the time of marriage and to show that these payments relate differently to the wife’s welfare. Nevertheless, we cannot claim to uncover causal links, as we have no source of exogenous variations for the amounts paid.³ We develop a conceptual framework conforming to anthropological knowledge and qualitative evidence that articulates a model of the determinants of marriage payments to the wife’s welfare outcomes and serves as a guide to interpret the empirical findings. Empirically, the results show that the bride price does not seem to correlate with either the wife’s access to household resources or most other measures of wellbeing that we use, contrary to the *cadeau* received from the husband. The results point to unobservable characteristics that explain both the existence and level of the *cadeau* and the relative consumption of the wife in the household (and more generally, the wife’s wellbeing) but are uncorrelated with the bride price itself. The model suggests

³In fact, contrary to the regularity exposed by Corno et al. (2020) in a different context, we find that bad agricultural years (due to the lack of rain) tend to imply the postponement of weddings, probably because the families cannot afford the required level of ceremonial expenses. However, this does not affect the amount paid. See section 4.2.

interpreting these unobservable variables as the importance that the husband attaches to his wife (or his love for her), which he signals through the value of the *cadeau*.

Section 2 of the paper presents the context and the conceptual framework. Section 3 describes the data. Section 4 highlights the determinants of diverse marriage payments. Section 5 analyses how those payments relate to womens' wellbeing and offers an interpretation of those results. Section 6 presents the robustness checks. Finally, section 7 concludes the paper.

2 Marriage Payments in Senegal

2.1 Bride Price, *Cadeau* and *Bagage*

Bride prices are present in most marriages in Senegal. They are either in-kind or cash transfers given by the family of the groom or the groom himself to the family of the bride. The bride price is given before the marriage. Although the marriage might have been arranged very early on, the payment of the bride price is the signal that allows the wife to join her husband's household and actually start their marital life. The bride price amount is negotiated between both sets of parents and is largely determined on the basis of local norms. A large part of the bride price is spent on the wedding ceremony, particularly for meals and clothing. The size of the wedding ceremony matters for families as, according to qualitative interviews, it is a way for the family of the bride to establish or consolidate their social status. The wedding ceremony is notably an occasion for many gifts to be exchanged among all the guests. Thus, the part of the bride price that is not spent on ceremonial expenses is redistributed by the bride's mother to people who are deemed to deserve such an allotment because they played a role in the childhood of the bride or because they contributed to the ceremony. No amount of the bride price is retained for future consumption. The guests (even if they did not receive money from the bride's mother) also make small monetary contributions (called *ndawtal*). The counterpart of this contribution will take place when the donors organize a ceremony themselves at a later date. The wedding is therefore an essential occasion to strengthen the family's social network, which could be mobilized again later, in particular regarding the future marriages of

siblings. See Buggenhagen (2012) for a description of this gift/counter-gift dynamic and its role in maintaining an active social network. Hence, even though a bride's family receives a bride price, in the Senegalese context, this does not imply real windfall earnings on the occasion of their daughters' wedding. A long-term effect through the network may exist, but the direct income shock caused by bride prices is probably very limited. In some rare cases, a small part of the bride price could be given to the bride, but it is often spent for her ceremonial outfit. If the bride price has an effect on the parental network, this effect might trickle down to the bride at some point in a context where family is a natural insurance network and transfers between generations are extremely common (La Ferrara (2010), Fafchamps and Quisumbing (2007)). Hence, the bride price could still affect the well-being of the wife, but to a lesser extent than that of her parents. This is consistent with the argument made by Chan and Zhang (1999).

The *cadeau* is given specifically by the husband to the bride. Traditionally, jewellery is offered, which constitutes a precautionary saving that is retained by the wife and can be used in case of divorce or widowhood. This offering therefore plays a similar role to the dower found in other Muslim countries. Currently, qualitative interviews suggest that the *cadeau* consists more of select conspicuous consumption goods, such as smartphones or radios, as well as some money, at least in urban settings. It might therefore have lost its long-term protective role. The *cadeau* is not mandatory upon getting married, contrary to the bride price. In fact, this practice was present in less than two-thirds of the marriages we observed. As it is optional, controlling for the husband's wealth, the practice could represent a fairly accurate signal of the value the husband attaches to marrying this particular woman, and this is clearly the way many women interpret it.⁴ Moreover, the *cadeau* is also often one of the first occasions at which the husband has the possibility to show commitment or involvement, and the practice allows him to demonstrate that he values the individualized relationship.

The monetary component of the *cadeau* can be used to partly cover the cost of the *bagage*, which is the trousseau the wife brings into her new household. The wife's family also contributes to the *bagage*. There is a high level of individual variation in the share of the *bagage* covered by

⁴We have no direct measure of a husband's wealth prior to marriage, but we observe his occupation, that of his father, and whether he already had an income-earning occupation before the marriage.

the bride's own relatives and that covered thanks to the husband's contribution. This *bagage* takes the form of kitchen utensils, dishes and other housewares, as well as sometimes bedroom furnishing. It is essential to ensure the wife's well-being in her new household; borrowing kitchen utensils from other women in the house is frowned upon. The content of the *bagage* remains the property of the bride alone. Because it often comes in large part from the bride's own family, its presence and size may well reflect the strength of the support she can expect from her kin group. In this sense, the *bagage* might correlate with a woman's outside options and affect her bargaining power within her marriage.

Beyond the bride price, the *cadeau* and the *bagage*, an in-kind transfer is sometimes made from the family of the bride to the family of the groom, mainly in the form of clothing for the wedding ceremony.

In the case of divorce, in principle, both the *cadeau* and the *bagage* remain the property of the bride. The bride price is supposed to be paid back if the divorce is initiated by the woman and occurs very early after the wedding. In practice, throughout the interviews with divorced women that we conducted in Senegal, we never met anyone who had to reimburse the bride price; however, we did observe that when women initiate a divorce, it often means that they leave their home with hardly anything and that they leave most of the *bagage* behind.⁵

The Senegalese data used in this paper reveal that in the sample of women whose first marriage occurred in the 10 years preceding the survey (between 1996 and 2006), a bride price was given in 85% of the cases, a *cadeau* was received in 62% of the cases, and the wife brought a *bagage* into the marriage in 56% of the cases (table 1). The transfer amounts are also quite large, as the mean bride price at the time of a first marriage is 121 000 (constant 2005) CFA francs (211 \$), and the mean *cadeau* is 68 000 (2005) CFA francs (118 \$), while the value of the *bagage* reaches on average 52 000 (2005) CFA francs (89 \$) (table 2)⁶. In one-third of all marriages, the 3 types of transfers exist simultaneously (table A2 in the appendix⁷). The sum of the bride prices and the *cadeaux* represents more than two-thirds of the mean yearly consumption per capita in the country. Of note is the fact that bride price amounts are in

⁵See transcribed interviews in French in Lambert and van de Walle (2012).

⁶Bride prices are much less frequent when women remarry (61% of the cases), while the occurrence of a *cadeau* is only slightly less frequent (53%). See Table A13 in the appendix.

⁷The table A1 in the appendix presents the coefficients of correlation between the different types of payments.

principle regulated by the February 1967 law on ceremonial expenses and limited to 3000 CFA francs. This amount, which is much below the observed levels, has not been adjusted since the enactment of the law. ⁸ The simultaneous presence of these different transfers at the time of marriage has never been studied. Some previous work has tried to understand simultaneous dowries and bride prices (e.g., in Bangladesh and Taiwan) but mainly in the context of the slow transition from one system to the other. Herein, the nature of those transfers differs in a deep way; thus, understanding their respective drivers and how they relate to married women's welfare would shed light on this understudied aspect of the marital institution in Senegal.

Table 1: Frequency of marriage payments

	N	Mean	SD
Positive Bride-Price	689	0.85	0.36
Positive <i>Cadeau</i>	689	0.62	0.49
Positive <i>Bagage</i>	689	0.56	0.50

Note: Sample: Women married between 1996 to 2006, observed in their first marriage.

Source: PSF 2006.

Table 2: Value of the marriage payments

	N	Mean	SD	Min	Max
Bride-Price (1000 FCFA 2005)	689	120.70	132.78	0.00	731.30
<i>Cadeau</i> (1000 FCFA 2005)	689	68.00	97.70	0.00	610.25
<i>Bagage</i> (1000 FCFA 2005)	689	51.47	76.69	0.00	546.87
Share of the <i>cadeau</i> in total payment to the bride's side	655	0.35	0.35	0.00	1.00
Bride-Price (1000 FCFA 2005), excluding zeros	581	143.13	133.03	1.00	731.30
<i>Cadeau</i> (1000 FCFA 2005), excluding zeros	423	110.75	104.00	1.30	610.25
<i>Bagage</i> (1000 FCFA 2005), excluding zeros	383	92.59	82.31	1.02	546.87

Note: Sample: Women married between 1996 to 2006, observed in their first marriage.

Source: PSF 2006.

⁸http://www.dri.gouv.sn/sites/default/files/LOI/1967/67_04.pdf

2.2 Conceptual framework.

To clarify the potential mechanisms at play, we present herein a simple model that articulates the determinants of the payments and the ways in which they might correlate with the wife's wellbeing in her marital household.⁹ We assume that the match is already fixed, and we only consider the stage where decisions regarding the marriage payments are made.

For marriages to take place, both families need to agree. The groom's kin discusses the possibility of marriage with the parents of the bride they have identified as a suitable match. The potential groom also has some say in the decision. Women who have never been married before have much less power of decision than anyone else about the marriage itself. They nevertheless have a choice in terms of how they will behave with their husband during their future marital life. Both families and the groom talk over the bride price, which should be sufficient for the bride's family to hold a wedding ceremony impressive enough to keep up with their social standing. What is appropriate is very much a matter of social norms prescribing what is expected from each family, given their social status and the relation they already have with their future in-laws. The bride price might also reflect the local marriage market. In addition, the groom has to decide whether to make a gift to his future wife and how much. The *cadeau* is a way for the groom to signal the fact that he actually aspires to this match. It might reassure the woman about the way he will behave towards her in the future by implicitly committing to providing her with the required financial support.¹⁰ The main objective of such a signal is to ensure the wife's reciprocal involvement in the marriage, including transfers (financial as well as emotional) towards her husband in their future marital life. In fact, as in any repeated game, cooperating at the beginning of a marriage helps ensure cooperation in subsequent periods. The incentive to respect the commitment implied by the gift is ensured by the risk that a disappointed wife might ask for divorce (a very common occurrence in Senegal; in 2006, more than 13% of women older than 30 had divorced at least once, with divorce rates peaking between 2 and 5 years into the marriage, as established by Lambert et al. (2017)).

The model below is designed to represent this situation with the simplifying assumption that the groom is the unique decision maker in regard to both the bride price and the *cadeau*,

⁹The work of Bloch et al. (2004) on wedding celebrations in rural India was very inspirational.

¹⁰In interviews, women describe a good husband as one who provides for the family.

with the positions of other parties entering into play through minimum requirement constraints.

First, the groom (or his family) offers to pay a bride price BP . For this amount to be accepted and the marriage to be allowed, it cannot be below the one customarily determined by $\overline{BP} = BP(z_w, z_h, m, sn)$, where the individual characteristics of husband and wife are denoted by (z_h, z_w) , m stands for the marriage market conditions favourable to men (gender imbalance for example), and sn denotes the social norms that apply to a particular marriage (due to the ethnic affiliation, regional practices, families social standing, etc.). z_w could encompass, for example, the age and education level of the bride. z_h could represent a husband's occupation (for instance, whether this occupation goes hand in hand with a stable income). In the Senegalese context, as the bride price results from negotiations at the family level and, as explained above, is relied upon by the bride's family to be able to organize a party that reinforces their social standing, we can expect the price to be heavily constrained by the existing norms (sn).

The amount of the *cadeau* Ca is chosen once the bride price has been fixed.¹¹ The parents of the bride may have had a higher decision-making power than the bride herself in the initial acceptance. Nevertheless, the level of goodwill with which the bride enters the marriage might matter to the groom, as it will determine the level of harmony and mutual emotional transfers among the couple. The more the groom attaches importance to marrying this particular bride, the more he will be willing to ensure her goodwill. The intensity of the interest of the groom towards the bride is denoted as I for involvement with the bride and is a continuous variable. This is the private information of the groom, and the *cadeau* is used to reveal it. The *cadeau* is in fact a signal sent to the bride to convey the groom's inclination appropriately once the marriage is decided and is independent of the bargaining that occurs between the parents. It also signals a commitment by the husband to offer financial support to his wife over the course of the marriage. This is not innocuous, as a husband failing to meet this obligation despite his initial commitment would face the risk of being punished by his wife through fewer transfers or even divorce. Men differ in their signalling cost, and it would be less costly for a loving husband to send such a signal.

We also introduce a measure of the degree of premarital knowledge between the spouses. The potential bride directly observes the groom's inclination towards her, I , with probability

¹¹This sequentiality mainly serves exposition purposes. In reality, the bride price and the *cadeau* might be decided more or less simultaneously, but the bride price remains the only compulsory marriage payment.

π . π could be empirically proxied by the proximity between both families that might either decrease or increase π according to which of the two following mechanisms dominates. On the one hand, being from the same ethnic group or the same family might be more likely in the case of an arranged marriage where π is low. On the other hand, belonging to the same kin group could also increase π . With probability $(1-\pi)$, the bride does not know the groom's attachment and can only form expectations about it thanks to the *cadeau*. We assume that her perception of the groom's involvement drives a binary decision; the bride needs to be induced to expect a certain level of care and involvement from her husband (denoted as $\overline{I_w}$) to send positive emotional and financial transfers. Otherwise, she abstains from any future transfers. The necessary *cadeau* for her expectation to reach this threshold is an increasing function of the characteristics of the husband (z_h). It is denoted by $\overline{Ca_w}(z_h)$. Below this amount, no cooperation will be obtained in the marriage. The expectation of the groom's quality induced by the *cadeau* is therefore supposed to be an increasing function of $q(Ca - \overline{Ca_w}(z_h))$, where $q(0) = 0$, $q' > 0$, $q'' < 0$. In other words, the bride's anticipation of the future involvement of the groom increases with the level of the *cadeau* Ca and is positive only if Ca exceeds the minimum amount she expects considering the characteristics of the husband. If truly interested in this marriage, the groom seeks to send a signal that would exceed his expectation of the bride's threshold, as failing to meet the wife's anticipations would prevent him from reaping the utility gain associated with having a harmonious marriage with the woman he actually cares for.

Groom's utility As noted above, men can differ in their interest towards conciliating the bride. In our model, this means that men can differ in their signalling cost c , which is mostly an emotional cost. We suppose that c varies between 0 and 1. We assume moreover that the cost of signalling can be formalized as a decreasing function of two different factors, namely, a component related to the observable characteristics of the wife (z_w) and a less tangible (unobservable) component of attraction or love (l). The less the groom is in love with the woman, the more it costs him to give a *cadeau*. The utility associated with the emotional benefit of marrying this particular woman and having a harmonious marital life is denoted as $v(1 - c)$, where v is strictly increasing and concave. This utility can only be enjoyed if the signal sent leads the bride to expect a level of care that exceeds $\overline{I_w}$, which is the level of involvement she

requires to cooperate in the marriage. If the signal sent is below \overline{I}_w , it leads to a disutility for the husband. For tractability, we assume that the function is continuous. We further assume that the utility of the groom is separable in consumption and involvement.

Hence, the groom chooses the bride price BP and the *cadeau* Ca that maximize his utility from marrying this bride (given that the match is already decided upon), written as follows:

$$U_h = u(Y_h - BP - Ca) + v(1 - c(z_w, l))(\pi I(z_w, l) + (1 - \pi)q(Ca - \overline{Ca}_w(z_h)) - \overline{I}_w(z_h)) \quad (1)$$

under the following constraint:

$$BP \geq \overline{BP}(z_w, z_h, m, sn) \quad (2)$$

where Y_h is the income of groom, c is the groom's signalling cost, and u and v are both strictly increasing and concave. The term $(\pi I + (1 - \pi)q(Ca - \overline{Ca}_w(z_h)) - \overline{I}_w(z_h))$ is the margin by which the groom's involvement perceived by the wife-to-be exceeds (or misses) her threshold for cooperation. For a slightly involved groom, $v(1 - c)$ will be almost null, and the interest in increasing $\pi I + (1 - \pi)q(Ca - \overline{Ca}_w(z_h)) - \overline{I}_w(z_h)$ will be low, whereas not sending a valuable signal would be very damageable for the utility of a highly involved groom.

Saturation of the constraint leads to the following:

$$BP = \overline{BP}(z_w, z_h, m, sn) \quad (3)$$

and the first order condition on Ca gives the following:

$$-u'(Y_h - \overline{BP}(z_w, z_h, m, sn) - Ca) + v(1 - c(z_w, l))(1 - \pi)q'(Ca - \overline{Ca}_w(z_h)) = 0 \quad (4)$$

For the bride price, the comparative statistics are directly obtained from the hedonic price function. For the *cadeau*, we compute the implicit derivatives as follows:

$$\bullet \frac{\partial Ca}{\partial \pi} = -\frac{-v(1 - c(z_w, l))q'(Ca - \overline{Ca}_w(z_h))}{u'' + v(1 - c(z_w, l))(1 - \pi)q''} < 0$$

- $\frac{\partial Ca}{\partial Y_h} = -\frac{-u''}{u'' + v(1 - c(z_w, l))(1 - \pi)q''} > 0$
- $\frac{\partial Ca}{\partial m} = -\frac{u'' \frac{\partial BP}{\partial m}}{u'' + v(1 - c(z_w, l))(1 - \pi)q''} > 0$
- $\frac{\partial Ca}{\partial z_h} = -\frac{u'' \frac{\partial BP}{\partial z_h} - v(1 - c(z_w, l))(1 - \pi)q'' \frac{\partial \overline{Ca_w}}{\partial z_h}}{u'' + v(1 - c(z_w, l))(1 - \pi)q''}$ whose sign is ambiguous if $\frac{\partial BP}{\partial z_h} > 0$, given the positive effect of z_h on Ca_w . The sign is positive if the link between the amount of the *cadeau* requested by the wife and the characteristics of the husband is stronger than the link between these characteristics and the bride price.
- $\frac{\partial Ca}{\partial z_w} = -\frac{u'' \frac{\partial BP}{\partial z_w} - \frac{\partial c}{\partial z_w} v'(1 - c(z_w, l))(1 - \pi)q'(Ca - \overline{Ca_w}(z_h))}{u'' + v(1 - c(z_w, l))(1 - \pi)q''}$ whose sign is ambiguous. $\frac{\partial Ca}{\partial z_w} > 0$ if the link between education and willingness from the groom to marry this particular wife is stronger than that between education and the bride price.
- $\frac{\partial Ca}{\partial l} = -\frac{-\frac{\partial c}{\partial l} v'(1 - c(z_w, l))(1 - \pi)q'(Ca - \overline{Ca_w}(z_h))}{u'' + v(1 - c(z_w, l))(1 - \pi)q''} > 0$

Finally, these comparative statics results are obtained as follows:

Variables	Effect on <i>cadeau</i>	Effect on bride price	
Level of knowledge about the groom	-	0	(1)
Income of the groom	+	0	(2)
Quality of the bride	?	+	(3)
Quality of the groom	?	+	(4)
Marriage market favorable to men	+	-	(5)
Love	+	0	(6)

Wife's utility In a second step, we focus on the situation during marital life, once the ceremony has taken place, and consider the wife's utility. This is an increasing function of her consumption C_w , of the financial support she obtains from her husband S and of some non-monetary dimensions of marital well-being denoted as A (housing independent from the in-laws,

for example).

$$U_w = u(C_w, S, A) \tag{5}$$

We suppose that the groom’s love, or the harmony in the couple, plays a positive role in the financial support of the groom towards his wife. This would mean the following: $S = S(\underset{+}{l})$, where S is the financial support of groom, assuming the other explanatory variables are constant (fixed at the time of marriage). Since we are expecting that $\frac{\partial C_a}{\partial l} > 0$, we also expect that $\frac{\partial S}{\partial C_a} > 0$, whereas $\frac{\partial S}{\partial BP} = 0$, when controlling for the observable variables that affect the occurrence of the marriage.¹² The exact same reasoning applies to the wife’s consumption level C_w and her non-monetary well-being A , which, given their observed characteristics, are also determined by the groom’s unobserved love for her and therefore should be positively correlated to the *cadeau* but not to the bride price.

Finally, the *bagage* does not appear in the above model, as the husband and his family have no say about it, even if it may also be partly financed by the *cadeau*. It is more likely to be determined by the support the bride can obtain from her own family and by the structure of the household she is planning to join (the presence of co-wives or in-laws in particular). The role of her own family suggests that succeeding in raising a large *bagage* bodes well for the future support of her kin group. As such, it could be correlated with future income transfers, for example, and therefore, higher individual consumption. Furthermore, it might well reflect the strength of her outside options and hence contribute to a higher bargaining power within the household.

Empirical model We will pair these predictions with the data. First, we will be interested in the correlates of the marriage payments and thus estimate the following:

¹²Note that an alternative story is possible whereby the *cadeau* does not have a signalling role and only reflects the love between the future spouses. This would lead to the same correlation pattern between the *cadeau* and the financial support during the marriage. To assess the relevance of the "signal of commitment" interpretation, we can look, thanks the 2011 follow-up survey, at whether the marriages where the observed financial support of the husband was below that predicted by the amount of the *Cadeau* were more likely to have ended in a divorce 5 years later. The results are indeed consistent with this story, although we lack power because only 43 such divorces are observed in our sample; the coefficient of the deviation from the predicted financial support in a divorce equation is negative but not significantly different from zero.

$$P_i = g(sn_i, z_{hi}, z_{wi}, m) + v_i \quad (6)$$

where P stands for payment, which can be either a bride price (BP), a *cadeau* (Ca) or a *bagage* (T). Some unobservable factors linked to the personality traits of the husband and wife and the interpersonal quality of the match are likely to enter into play for all these payments in the error term v . Love plays a role specifically for the *cadeau* in the model and is encompassed in the error term of the corresponding regression (v_{Ca}).

In a second step, we will be interested in the link between the payments and the welfare of the wife in her new household after the marriage. Here, again, we will exhibit regularities thanks to the following set of regressions:

$$Y_i = g(m, sn_i, z_{hi}, z_{wi}, Ca_i(l), BP_i) + u_i \quad (7)$$

Our model suggests that the coefficient associated with Ca_i should be significantly positive, while the coefficient associated with BP_i might not be significantly different from zero. Indeed, controlling for the observable variables that affect both the payment and the wife's outcomes, we expect the unobservable characteristics captured by the *cadeau* (kindness of the husband, quality of the marriage, harmony in the couple), more than those captured by the bride price, to play a role in determining the wife's access to household resources and thereby contribute to the correlation with the wife's wellbeing (Y).

3 Data and Descriptive Statistics

3.1 Data

Survey The data used in this study are from the PSF Survey (de Vreyer et al., 2008)¹³. The data were collected in 2006 and are nationally representative. This survey covers 1750 house-

¹³Momar Sylla and Matar Gueye of the Agence Nationale de la Statistique et de la Demographie of Senegal (ANSD), Philippe De Vreyer (University of Paris-Dauphine and IRD-DIAL), Sylvie Lambert (Paris School of Economics-INRAE) and Abla Safir (World Bank) designed the survey. The data collection was conducted by the ANSD.

holds and 14 450 individuals. It records all the marriage payments: bride price, *cadeau* and *bagage*.¹⁴ This level of detail is very rare; data sets that record bride prices or dowries usually stop at this single (main) marital transfer. There are few exceptions concerning Bangladesh and Pakistan, which are countries where bride prices and dowries tend to increasingly coexist (Ambrus et al., 2010). In the Senegalese context, the practice of multiple marriage payments, in addition to the nearly universal bride price, is widespread. These marriage payments are self-recorded; they were asked of the husband if he was present, or of the wife otherwise. As such, these reported payments can be biased (beyond a random measurement error). We do not think that the bias would systematically correlate with the outcomes considered at the time of the survey but rather, potentially, to the education level of the bride or the consumption level of the household. Thus, we control for these variables in the analysis.

Consumption The PSF survey collects information on food and non-food expenditures. The recall period is chosen for each good by the respondent, and expenditures are then annualized. A particular strength of the data set is that it takes into account the intrahousehold allocation of consumption. Qualitative interviews have shown that each household can be split into semi-autonomous budgetary units. Between these subgroups, the sharing of financial responsibilities is very clearly defined, and individual resources are not pooled. In the quantitative data, we have reproduced this natural division of the household, calling each unit a cell. These cells are composed of a cell head and his dependents, i.e., his wife, children, or the unaccompanied members of the family. Household heads are, however, systematically recorded in an autonomous cell that includes only their unaccompanied dependents (children whose mother does not reside in the household or a widowed parent, for example). Their wives each head a separate cell. Adult male members, other than the head of household, receive different treatment, depending on whether they are polygamous. They are located in the same cell as their wife if they are monogamous or in different cells if they are polygamous. Given this rule, most women heading

¹⁴We also attempted to record the contribution of the bride's family to the family of the groom, but the question was not understood in a homogeneous way by all the enumerators. Some of them understood that participation in ceremonial expenses was not to be recorded, while others included such expenses. As a result, we chose not to use this information.

a cell of their own are either the household head or married to the household head.¹⁵ Their husband should not be located in their cell, except if they do not live in the same household and he was visiting at the time of the survey. This happened for 10 women in our sample.

Consumption is recorded in the following three parts: consumption common to the whole household, consumption that can be assigned to specific cells and finally, consumption shared between several cells but not the whole household. Total cell consumption can be constructed by ascribing a share that is proportional to the cell size of the common or shared expenditures and adding cell-specific expenses. Intrahousehold inequality in access to consumption can therefore be exhibited. Individuals within the same household do not always have the same consumption level. It appears that food consumption is rather equally shared within a household, while it is not the case for non-food consumption (de Vreyer and Lambert, 2020).¹⁶ We will consider the ratio of a woman's cell per capita non-food consumption to that of her household as a measure of her access to the household resources. The share of household consumption that comes down to the wife is actually a direct measure of her welfare. This measure should reflect her bargaining power, according to classical collective household models. This consumption level gives a fairly encompassing picture of the wife's welfare within the household and informs on what truly matters *in fine*, i.e., the share of total resources accruing to her. Note that those women who are not in an independent cell are generally located in their husbands' cell, and the amount of resources that reaches that cell also reflects the position of the couple in the household. Although it represents a situation where what is at stake is not what can be obtained from the husband, this is nevertheless one dimension of a wife's situation within the household.

For each consumption record in the survey, the persons who financed the corresponding expenditures are registered. We can therefore consider another outcome reflecting the support the husband provides to his wife, i.e., the share of the wife's cell consumption that is financed by the husband. We are nevertheless aware that this measure is ambiguous. A high level of

¹⁵Single mothers living with kin would also head their cell, as well as the wives of polygamous household members.

¹⁶Meals are taken out of a common dish; thus, it is virtually impossible to actually record individual intake levels for meals that are taken at home. We might therefore underestimate the actual inequality related to food consumption. Nevertheless, inequality is likely to be rather limited in such a setting compared to a situation where everyone has access to an individualized portion.

support from a husband could also mean less autonomy and therefore less welfare for the wife. This is the same ambiguity as that attached to the wife's income, as highlighted by Doss (1996); the wife's income is not a good measure of bargaining power since a woman with a high level of bargaining power could decide not to work. Note that consumption data do not suffer from this ambiguity. We complete this analysis by studying other outcomes that can proxy women's welfare, such as fertility pressure, polygamy and coresidence with the in-laws. This is detailed in section 5.

Sample The amounts recorded for the marriage payments possibly suffer from recall bias. To try to circumscribe this problem, we limited our sample to women who got married in the 10 years preceding the survey, hence after 1996. The sample for which information on the amount of each marriage payment and the control variables (such as education) is available contains 809 women, once the data were trimmed for outliers.¹⁷ Although all the married women were asked information about their husband, we have more information on the husbands in the case of the coresidence of the couple; i.e., 558 women coreside with their husband (69% of the sample).¹⁸ The analysis of the financial support of the husband cannot be undertaken when the husband and wife are recorded in the same cell, as their consumption is not recorded separately in this case. We therefore restricted the analysis for this outcome to the sample of wives who are heading their cell and are thus not located in the same cell as their husband (503; among them, 342 are coresiding with their husband). We check the robustness of the results to the sample definition; we do so first by restricting in turn the analysis to women in their first marriages (689 women, among them 411 are heading their cell) and to coresiding women (558 women, among them 342 cell's head¹⁹) and then by enlarging the sample to include women who got married in the 15 years preceding the survey (1059, among whom 720 are their cell's head). Table A3 in the appendix presents a summary of the number of observations in these different

¹⁷ To avoid potential errors, we excluded the last percentile for every marriage payment. Thus, the sample for which the control variables are known, initially 850 women, was restricted to 825. We also excluded the last percentiles of our main outcomes, namely, the non-food consumption per capita and of the relative non-food per capita, to avoid outliers biasing our results.

¹⁸ Non-coresidence can happen in different situations: (i) very recent marriages, if the wife remained with her parents and is waiting to join the marital household either because she is too young or because the bride price has not been paid in full, (ii) in some polygamous unions where wives want (and obtain) independent dwellings, or (iii) if the wife lives in the village, while the husband is based in town for work and only comes for regular visits.

¹⁹ Among them, 310 are wives of household's head.

samples of interest.

Married Women’s Characteristics Table 3 provides descriptive statistics for the women in our main sample.²⁰

Twenty-two percent of those women reported having a primary education, and 12% reported having a secondary education. Half of the sample live in a rural area. The age at marriage was on average 22 years old. Please note that for some of these women, the marriage observed is not their first marriage, which explains the rather high age at marriage reported herein. For first marriages, the average age was 20 (see table A12), and the age gap with the husband was 12 years. Three-quarters of the wives reported living in a monogamous union at the time of the survey.²¹

²⁰Other samples are described in the appendix, i.e., tables A4, A9, A10, A12 and A14.

²¹The women in the sample are recently married, and their husbands could marry a second wife in the future.

Table 3: Married women's characteristics

	N	Mean	SD
Wife with some primary education	809	0.22	0.42
Wife with secondary or superior education	809	0.12	0.33
Age of the wife at marriage	809	22.45	8.73
Age Difference between spouses	696	11.53	7.83
Log of the expenditures of the hh pc	809	12.31	0.78
Wife lives in a rural place	809	0.51	0.50
In a monogamous union	809	0.75	0.43
In a polygamous union, first rank	809	0.04	0.20
In a poly. union, sec. or further rank	809	0.21	0.41
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	809	1.04	0.56
Share of the wife's cell expenditure financed by the husband	731	0.54	0.44
Presence of in-laws	802	0.36	0.48
Polygamous husband	809	0.25	0.43
Number of months between marriage and first birth	746	26.82	26.47

Note: Sample: Marriages from 1996 to 2006. The information on husband's age is missing for some non-coresiding women, thus the missing observations for the age gap. The share of the wife's cell expenditures financed by the husband is only computed for women who are heading a cell. Number of months between marriage and first birth can only be computed when marriage date is precise enough. In a number of cases, only the year of marriage was provided.

Source: PSF 2006.

4 Correlates of Marriage Payments

4.1 Who draws in which marriage payments?

To analyse the correlates of the various payments, we first estimate the probability that such transfers occur at the time of marriage, and then we estimate the amount paid. The explanatory variables are grouped into different sets. The first set describes the local environment and aims to approach the role of local norms. It includes the region of residence of the couple (as a proxy of the region of residence of the parents of the husband, given the prevailing patrilocal customs), dummies for ethnic groups, and the average per capita consumption at the district

level (to control for the wide geographic disparities in living standards).²² The first set also includes the date (year) of the marriage and the conditions of the local marriage market at that time, as captured by the women-to-men sex ratio in the district of residence of the wife (following Chiappori et al. (n.d.) or Abramitzky et al. (2011)).²³ A second set of variables reflects the endogamy of the match in various dimensions (whether the spouses belong to the same family, to the same ethnic group, or if the fathers have the same employment status). A higher level of endogamy might have improved the information available to the wife about her husband prior to the wedding. On the other hand, a highly endogamous marriage is more likely to have been arranged by the families, without regards to the wishes of the couple. Characteristics of the families form the third group of variables, including the professional occupation of the wife’s father (whether employer, employee, civil servant, formal or informal worker, farmer or inactive), whether the wife’s parents were alive at the time of marriage, and the number of siblings of each spouse. Finally, the individual characteristics of the wife and husbands form the fourth and last set; education and occupation are accounted for.

We investigate for all married women the link between the dependent variable and the above-mentioned sets of characteristics. The results are presented in table 4 for the logit estimation of the probability of a given transfer taking place and in table 5 for the corresponding amounts (given the share of null payments, we conduct this analysis using a tobit specification). For the subset of women who coreside with their husband, more information is available, and we present the results for this sample using a wider set of explanatory variables. The results restricted to the smaller set of variables that are common to all the observations are presented in the appendix (tables A5 and A6). These results are very similar to the results obtained by using the whole sample of married women.²⁴

For both the existence and level of the bride price, the explanatory variables related to region and date of marriage have significant explanatory power. The district-level women-to-

²²Throughout the paper, the term district refers to the territorial division called a department in Senegal. There are 45 departments in the country.

²³We define the gender ratio as the number of women aged 16 to 26, divided by the number of men aged 26 to 36, by district, using the Census data from 2002. We choose to use the district of current residence of the wife, since, given the patrilocal practices, this district has a high probability of also being the district of residence of the groom at the time of the marriage.

²⁴Using all the marriages over a period of 15 years, from 1991, gives very similar results. These results are presented in tables A7 and A8 in the appendix.

men ratio plays a negative role in this type of transfer, showing the weight of local conditions on the marriage market. This is true even when controlling for the average consumption level in the department, which could well be correlated with the sex ratio if men migrate to earn a living. As expected, this measure of the local living standard is positively correlated with the bride price. The characteristics of the wife are important as well. The wife's age at marriage affects the probability that a bride price is paid, as the bride price is less likely for older brides who might not be in their first marriage, while her education also affects the amount; women with at least a primary education but especially those with a secondary or higher education, command higher bride prices. It should be remembered that women with a secondary education or higher are only 12% of our sample, and this achievement may be as indicative of her family's social standing than of her own quality. It is also noteworthy that higher bride prices are paid when at least one of the parents of the bride is alive at the time of marriage. In fact, the parents are truly the ones who rely on the bride price to reaffirm their social standing and therefore have higher stakes in negotiating it. Higher bride prices are also paid if the husband is a farmer. On the other hand, consistent with the conceptual framework, belonging to the same family or the same ethnic group is not significantly correlated with the bride price. Regarding the *cadeau* or the *bagage*, it is worth noting that if these items also vary by region and marriage date, they do not vary by district consumption level or marriage market conditions, thereby supporting the notion that these payments are determined at a more individualized level than are bride prices. The *cadeau* seems to be driven more by the characteristics of the husband, for both the probability of a *cadeau* to be given (which is particularly strong when the husband is a farmer) and for the value of the *cadeau*; husbands who already had a job at the time of the marriage and men at both ends of the socio-economic spectrum (either civil servants or employers on the one hand and farmers and those educated in Koranic schools on the other) give higher *cadeaux*. Belonging to the same ethnic group is negatively correlated with the *cadeau*, both in terms of occurrence and value. The model suggests that this outcome follows from the possession of better prior mutual knowledge that makes signalling from the groom less necessary. However, belonging to the same family increases the probability of receiving a *cadeau*, as well as its amount, although spouses may know each other before marriage. The conceptual framework suggests that this outcome might stem from the fact that endogamous marriages, being more

often arranged by the families, require a special effort from the groom to signal his personal interest above and beyond the family's desire to see this particular marriage occur.²⁵ Note, however, that belonging to the same family also means belonging to the same ethnic group, and the total effect is always significantly negative; i.e., the information effect dominates that of the arranged marriage. Finally, a *bagage* is more likely to exist if the husband is a farmer.

Unfortunately, information on the income of the husband at the time of marriage is not available in the survey. However, thanks to retrospective data about their first job, we are able to compute a dummy variable indicating whether the husband had worked before the year of the marriage. As expected, this variable is positively correlated with the amount of the *cadeau* but not of the bride price.

In total, all of the results can be read through the lens of the conceptual framework developed above, which allows us to make sense of the patterns just described. Bride price payments appear to be decided mainly in accordance with local standards that vary per region, the local standard of living, the local sex ratio at the time of marriage, whether the bride's parents are alive (for women of a given age) and education level. In contrast, the *cadeau* seems to be more individualized, with the characteristics of the spouses playing a greater role. The negative correlation between ethnic endogamy and the *cadeau* can be understood in our framework by the fact that signalling one's good will is more important for the husband if he is more distant from his future wife to start with; however, this effect is dampened in the case of an arranged marriage, as proxied by family endogamy.

²⁵An alternative interpretation for this positive correlation could be that a *cadeau* is offered also when spouses already know each other, precisely because they love each other.

Table 4: Probability of Positive Marriage Transfers, All Marriages

Contribution	Bride Price		Cadeau		Bagage	
	All	Coresident	All	Coresident	All	Coresident
Women-to-men ratio in the department	-1.07 (0.98)	-3.22** (1.38)	0.76 (0.64)	0.99 (0.82)	0.80 (0.63)	0.53 (0.79)
Average of the logarithm of the hh consumption per cap by department	1.78*** (0.63)	1.89** (0.89)	-0.60 (0.45)	-0.42 (0.55)	0.16 (0.44)	0.30 (0.57)
Wife is wolof	-0.02 (0.27)	-0.18 (0.39)	0.11 (0.22)	0.16 (0.28)	0.42** (0.21)	0.39 (0.28)
Wife is poular	-0.09 (0.28)	-0.24 (0.39)	0.27 (0.22)	0.56** (0.28)	0.38 (0.23)	0.04 (0.29)
<i>Characteristics of the Match</i>						
Couple from the same family	0.24 (0.22)	0.07 (0.31)	0.46** (0.18)	0.25 (0.24)	0.25 (0.18)	-0.19 (0.23)
Couple from the same ethnic group	-0.14 (0.29)	0.15 (0.41)	-0.81*** (0.25)	-0.83** (0.33)	-0.49** (0.24)	-0.48 (0.31)
Fathers with same professional status		-0.01 (0.29)		0.04 (0.21)		0.34 (0.22)
<i>Characteristics of the Families</i>						
Professional status Wife's Father (ref. independent/informal employee)						
..... Farmer	0.35 (0.27)	0.41 (0.37)	-0.07 (0.22)	-0.25 (0.30)	-0.06 (0.22)	-0.53* (0.29)
..... State employed/employer	0.01 (0.31)	0.23 (0.40)	0.16 (0.26)	-0.13 (0.32)	0.00 (0.26)	-0.15 (0.33)
..... Other	-0.42 (1.04)	-0.70 (1.18)	0.15 (0.93)	-1.25 (1.29)	-1.52* (0.92)	0.00 (.)
Number of siblings of the wife alive	-0.03 (0.04)	-0.09 (0.06)	0.07** (0.03)	0.07** (0.04)	0.04 (0.03)	0.03 (0.04)
Number of siblings of the husband alive		0.00 (0.05)		0.09** (0.04)		0.05 (0.04)
Parents of the wife alive at marriage	0.35 (0.40)	0.55 (0.54)	-0.01 (0.36)	0.16 (0.50)	-0.01 (0.36)	-0.29 (0.51)
<i>Characteristics of the Wife</i>						
Education (ref. no education)						
..... Primary	-0.21 (0.24)	-0.03 (0.31)	0.63*** (0.22)	0.54* (0.30)	0.25 (0.22)	0.13 (0.27)
..... Secondary	0.30 (0.36)	0.60 (0.51)	0.48 (0.30)	0.23 (0.38)	0.44 (0.29)	0.16 (0.37)
Age of the wife at marriage	-0.05*** (0.01)	-0.04 (0.02)	-0.01 (0.01)	-0.02 (0.02)	-0.04*** (0.01)	-0.02 (0.02)
Wife lives in a rural place	0.31 (0.30)	-0.29 (0.48)	0.15 (0.26)	-0.15 (0.34)	0.16 (0.25)	0.05 (0.36)
<i>Characteristics of the Husband</i>						
Professional status (ref. independent/informal employee)						
..... Farmer	-0.35 (0.33)	-0.17 (0.53)	0.49** (0.25)	0.80** (0.34)	0.11 (0.24)	0.73** (0.33)
..... State employed/employer	0.04 (0.27)	-0.46 (0.38)	0.28 (0.23)	0.40 (0.31)	0.22 (0.22)	0.12 (0.29)
..... Other	-0.20 (0.38)	-0.54 (0.49)	-0.10 (0.32)	-0.06 (0.36)	0.28 (0.32)	0.04 (0.35)
Husband has been to coranic school		-0.17 (0.35)		0.30 (0.24)		0.45* (0.25)
Husb. worked at time of marriage		0.68 (0.76)		0.81 (0.57)		1.20** (0.58)
Constant	-19.15** (7.90)	-18.09* (11.00)	6.61 (5.79)	2.95 (7.14)	-2.52 (5.80)	-5.32 (7.46)
Region and marriage year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pval_region+marriage year	0.04	0.01	0.00	0.01	0.00	0.00
N	809	548	809	558	809	554
Dep. Var. mean	0.81	0.85	0.60	0.62	0.53	0.62
st. dev	0.39	0.35	0.49	0.49	0.50	0.49
R2	0.14	0.14	0.10	0.14	0.12	0.15
chi2	98.23	79.57	89.72	79.65	109.40	90.30

* p<0.10, ** p<0.05, *** p<0.01.

Note: Logit estimates, Dependent variables: occurrence of bride price, *cadeau* or *bagage*.

Omitted occupation category is that of independent or informal employee. Coefficients related to the occupation dummies inactive and unknown are not displayed because they are never significant, as well as the dummy unknown for Same family and the dummy unknown for Fathers with same professional status. Standard errors clustered at the husband level in parentheses.

Sample: For the first, third and fifth columns, women who married between 1996 and 2006. For the second, fourth and sixth column, subsample of those who reside with their husband. Source: PSF 2006.

Table 5: Amount of Marital Transfers, All Marriages

Contribution	Bride Price		Cadeau		Bagage	
	All	Coresident	All	Coresident	All	Coresident
Women-to-men ratio in the department	-63.06 (41.92)	-163.69*** (51.34)	-25.62 (48.62)	32.20 (48.92)	17.87 (31.37)	7.06 (32.87)
Average of the logarithm of the hh consumption per cap by department	78.45*** (30.12)	50.05 (35.75)	-15.91 (29.02)	-22.48 (31.63)	17.88 (29.37)	26.29 (34.15)
Wife is wolof	22.34 (14.78)	13.85 (17.71)	-4.42 (13.21)	11.37 (15.23)	12.64 (12.46)	13.41 (14.11)
Wife is poular	7.58 (13.98)	0.60 (15.87)	13.17 (14.18)	35.43** (15.91)	1.85 (12.83)	-9.85 (14.42)
<i>Characteristics of the Match</i>						
Couple from the same family	-5.46 (11.96)	-14.94 (13.61)	23.85** (11.69)	14.58 (12.89)	11.04 (10.49)	-1.31 (11.62)
Couple from the same ethnic group	11.41 (16.74)	26.84 (18.82)	-53.01*** (16.05)	-62.66*** (19.38)	-28.24** (14.33)	-29.52* (15.77)
Fathers with same professional status		21.68* (12.59)		-3.18 (11.24)		4.46 (10.26)
<i>Characteristics of the Families</i>						
Professional status Wife's Father (<i>ref. independent/informal employee</i>)						
..... Farmer	15.68 (12.02)	11.68 (13.57)	1.06 (12.44)	-0.25 (15.02)	-4.35 (12.12)	-21.36* (12.83)
..... State employed/employer	21.32 (19.14)	41.90** (20.76)	16.85 (15.53)	1.71 (16.94)	-3.26 (16.57)	-2.36 (18.14)
..... Other	-16.98 (45.04)	-6.94 (52.31)	-5.29 (58.37)	-87.60 (68.15)	-116.48* (63.30)	-643.30 (.)
Number of siblings of the wife alive	2.26 (2.19)	0.14 (2.49)	3.40* (1.92)	1.86 (2.12)	0.43 (1.74)	0.12 (1.89)
Number of siblings of the husband alive		4.11* (2.43)		5.52** (2.16)		4.52** (2.12)
Parents of the wife alive at marriage	38.23** (18.69)	55.66*** (21.23)	-5.65 (22.83)	-4.93 (31.05)	-0.37 (21.67)	-16.88 (25.86)
<i>Characteristics of the Wife</i>						
Education (<i>ref. no education</i>)						
..... Primary	22.76* (13.18)	14.87 (15.96)	46.44*** (13.35)	32.55** (14.81)	20.73* (12.05)	13.49 (13.26)
..... Secondary	111.88*** (21.95)	104.97*** (24.76)	68.45*** (19.37)	41.42* (23.38)	50.07** (20.40)	38.68 (25.06)
Age of the wife at marriage	-4.18*** (0.70)	-3.51*** (0.91)	-2.09*** (0.70)	-2.61*** (0.94)	-2.47*** (0.67)	-1.16 (0.85)
Wife lives in a rural place	13.46 (14.72)	-15.10 (19.09)	20.89 (15.12)	-4.84 (18.26)	16.43 (13.36)	12.68 (15.80)
<i>Characteristics of the Husband</i>						
Professional status (<i>ref. independent/informal employee</i>)						
..... Farmer	4.07 (14.79)	29.53* (17.87)	37.12** (14.45)	58.58*** (17.08)	-7.74 (11.96)	14.50 (12.49)
..... State employed/employer	25.43 (16.52)	15.43 (19.71)	34.41** (14.80)	37.90** (16.79)	17.08 (14.57)	7.59 (17.62)
..... Other	30.76 (19.25)	24.51 (20.28)	4.60 (17.29)	10.20 (16.83)	4.86 (17.08)	-1.39 (16.27)
Husband has been to coranic school		11.59 (14.52)		30.22** (13.84)		20.66* (11.89)
Husb. worked at time of marriage		-6.23 (40.56)		74.92** (31.02)		77.21** (32.89)
Constant	-821.51** (394.66)	-364.32 (460.26)	302.04 (374.15)	225.80 (414.68)	-189.96 (379.21)	-372.70 (432.65)
sigma	138.94*** (6.12)	131.33*** (6.56)	122.86*** (5.94)	112.89*** (6.10)	112.04*** (6.34)	101.49*** (7.13)
Region and marriage year FE						
Pval_region+marriage year	0.00	0.00	0.00	0.00	0.00	0.00
N	809	558	809	558	809	558
Dep. Var. mean	109.65	117.03	62.17	62.35	47.86	53.54
st. dev	130.85	128.53	92.92	87.44	74.69	75.33
R2	0.02	0.02	0.02	0.02	0.02	0.02
F	4.50	3.02	2.75	1.98	3.02	.

* p<0.10, ** p<0.05, *** p<0.01.

Note: Tobit estimates, Dependent variables: amount of bride price, cadeau or bagage, expressed in 1000 FCFA 2005. Omitted occupation category is that of "independent or informal employee". Coefficients related to the occupation dummies "inactive" and "unknown" are not displayed because they are never significant, as well as the dummy "unknown" for "Same family" and the dummy "unknown" for "Fathers with same professional status". Standard errors clustered at the husband level in parentheses. Sample: For the first, third and fifth columns, women who married between 1996 and 2006. For the second, fourth and sixth column, subsample of those who reside with their husband. Source: PSF 2006.

4.2 The impact of transitory shocks

The literature has investigated the impact of transitory shocks on the timing of a marriage and the marriage payments. The idea is that in societies where bride prices are paid at the time of the marriage, the parents could be tempted to marry their daughter off early when facing a negative income shock to be able to use the bride price payment to smooth consumption. The results obtained suggest a wide variety of situations. While Corno et al. (2020) show that droughts in societies with bride prices can indeed accelerate the timing of a marriage and decrease the bride price paid, Lowes and Nunn (2017) do not find a correlation between bride prices and age at marriage for the Democratic Republic of Congo. We study here how the Senegal marriage market reacts to transitory local income shocks.

We consider weather shocks at the time when women were at risk of being married for the first time, using rainfall deviation from the long-term average. Rainfall data measured every month from 1982 to 2007 at the district level are matched to every individual in the survey, based on the district of residence of the wife at the time of the PSF survey²⁶. This is the district the wife married into and thus, as argued before, it is likely to be a good proxy for the district of residence of the husband's family. It makes sense to use this district, as the husband's family is the one who will have to pay the bride price, and their capacity to do so might be affected by adverse shocks. The district of current residence of the wife is probably a noisier proxy of the exact localization of the wife's family. The district of birth of the wife is more appropriate to account for this location and would be relevant if the girl's parents adjusted the marriage timing to cope with shocks. We also used this location in an alternative specification.

To construct a measure of rainfall shock, district and year rainfall averages are first computed, and the long-term average is obtained by taking the mean of the yearly rainfall average over the twenty-five years for which the information is available²⁷. For each household and each year, we define the positive (negative) rainfall shocks as situations where the rainfall average that year is more than one standard deviation above (below) the long-term average. Descriptive statistics on the occurrence of shocks are available in Table 6.

²⁶Data used are the CHIRPS Data. CHIRPS was created in collaboration with scientists at the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center to deliver reliable, up-to-date, and more complete datasets for a number of early warning objectives (such as trend analysis and seasonal drought monitoring) using satellite data and precipitation grids produced from station data. They can be downloaded at this address: <http://chg.geog.ucsb.edu/data/chirps/>

²⁷We concentrate on the rainy season, which covers the June to October period.

Table 6: Statistics on Rainfall Shocks

	count	mean	sd	min	max
Negative shock at 16, 17 or 18 years old	745	.2107383	.4081069	0	1
Positive shock at 16, 17 or 18 years old	745	.3409396	.4743436	0	1

Note: A negative (positive) shock is a rainfall level that is more than one standard deviation below (above) the long-term average any of the 3 years when the woman was age 16 to 18.

Sample: Women married between 1996 and 2006.

Since the timing of a marriage is endogenous, we look for the occurrence of a shock during the period when the marriage risk is highest for girls, i.e., when the bride was 16, 17 and 18 years old. We are not able to have these data for the older women of the sample, as the rain data starts only in 1982. Therefore, we run the model including those variables only for the subsample of 690 women for whom we can construct a measure of rainfall shock. The results indicate that dry years tend to delay marriages. We do not find any significant impact of rainfall shocks on the amount of the marriage payments, although the point estimate is negative and not negligible for the *cadeau* (Table 7). In this context, the adjustment to drought within the marriage market passes mainly through quantities (marriage postponement). This outcome is consistent with the fact that the amount of the bride price has to respect a norm that cannot easily be disregarded. People wait for better times to marry to be able to pay the required amount. At the same time, since the *cadeau* is not required, if the marriage happens in a bad year, as it might already have been difficult to collect the necessary bride price, the husband may adjust his *cadeau* downwards.²⁸

²⁸We performed the same analysis using the district of birth of the wife instead of her district of residence. We have this information only for the second wave of the panel; therefore, we can have the rainfall deviations only for the people who have been followed between the two waves. This restricts the sample to 576 women. The results using the district of birth of the wife are similar to the previous results. The results also hold when the sample is restricted to first marriages. These additional results are available with the authors.

Table 7: Impacts of Rainfall Shocks

	Age at marriage	Amount of bride price	Amount of gift	Existence of a bride price	Existence of a gift
Negative shock at 16, 17 or 18 years old	4.9286*** (0.48)	-4.2591 (12.85)	-12.6083 (9.52)	-0.0535 (0.04)	-0.0131 (0.05)
Positive shock at 16, 17 or 18 years old	-1.0232** (0.44)	0.8501 (10.21)	-3.2725 (6.88)	-0.0077 (0.03)	-0.0244 (0.04)
Wife lives in a rural place	-1.8376*** (0.51)	14.9538 (13.08)	21.0324** (9.43)	0.0328 (0.04)	0.0743 (0.05)
Wife with some primary education	0.4071 (0.48)	27.8680** (11.98)	34.3890*** (10.20)	-0.0570 (0.04)	0.1645*** (0.05)
Wife with secondary or superior education	1.4103** (0.60)	118.2507*** (20.32)	60.4915*** (14.59)	0.0591 (0.05)	0.1447** (0.06)
Constant	19.7345*** (0.76)	124.9089*** (21.37)	64.2354*** (17.39)	0.7871*** (0.06)	0.5166*** (0.08)
Region and time FE	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes
N	745	745	745	745	745
Dep. Var. mean	20.65	117.00	65.05	0.83	0.62
st. dev	5.53	133.32	94.43	0.37	0.49
R2	0.33	0.12	0.12	0.07	0.09

* p<0.10, ** p<0.05, *** p<0.01.

Note: The table reports estimates of the effects of rainfall shocks on the age at marriage and the marriage payments. OLS estimates are reported in the first 3 columns, logit estimates in the last 2 columns. Amounts are expressed in 1000 FCFA 2005. All models include controls for the year of marriage, the wife's ethnic group and education. Standard errors in parentheses.

Sample: Women who married between 1996 and 2006, and who are born after 1966 (in order to have rainfall data when they were 16 years old).

4.3 Summing up

In total, the results presented on the correlates of marriage payments are consistent with the interpretation that bride prices are largely determined by local norms, while *cadeaux* seem more related to the wife's and husband's characteristics. The unexplained variance could be ascribed to two non-exclusive factors. The first factor is measurement error. Indeed, although we restricted the sample to relatively recent marriages, the participants' recall or reporting might be imperfect. The other possibility is the role of unobservable characteristics such as the kindness of the husband, the value he attaches to marrying this particular woman, and the outside options in the marriage market for this particular woman. Analysing how those transfers correlate with the welfare outcomes of the wife after marriage will help us assess whether noise dominates or whether the payments recorded carry a relevant signal that goes above and beyond the one contained in the observable characteristics.

5 Wives' Wellbeing

5.1 Empirical Strategy

To study how measures of women's individual welfare correlate with the various marriage payments when controlling for observable characteristics, we estimate the following linear equation, which is an empirical counterpart to equation 7:

$$Y_{i,h,m} = \alpha_0 + \beta_1 G_i + \beta_2 BP_i + \beta_3 T_i + \gamma X_{i,h,m} + \mu_r + \nu_t + \varepsilon_{i,h} \quad (8)$$

where subscripts i , h , m and r denote individual, household, husband and region, respectively²⁹. $Y_{i,h,m}$ is an indicator of the wife's wellbeing in her household. G_i is the *cadeau* she received at marriage, BP_i is the bride price paid, and T_i the value of the *bagage*. $X_{i,h,m}$ are characteristics of the wife, her household and her husband. μ_r and ν_t are dummies for the region and the marriage year, respectively. Finally, $\varepsilon_{i,h}$ is the error term, which is clustered at the husband level.

The wife's access to household resources is the first dimension of her wellbeing studied herein. As indicated in section 3, we look at two different variables. On the one hand, we consider the ratio of per capita non-food consumption of the wife's cell to the mean per capita non-food consumption of the household. On the other hand, we use the share of the individual consumption of the wife's cell that is financed by her husband. For this latter outcome, we limit the sample to wives who are not registered in the same cell as their husbands (mainly the wives of household heads), as the survey design ensures that their consumption is collected separately from that of their husband. The other outcomes considered are non-monetary proxies of the strength of the wife's position in the household, i.e., the probability of having become polygamous since marriage and coresidence with her in-laws (remaining monogamous and obtaining a dwelling independent from one's in-laws are very clearly the preferred living arrangements), and we use the time interval between marriage and the first birth as a measure of fertility pressure. Given that the women in this sample married rather recently, we cannot investigate the correlates of their children's educational outcomes.

²⁹There are 12 regions represented in our sample, out of a total of 14 regions in Senegal.

We control for the logarithm of the total consumption per capita of the household, the number of children and adults in the household and in the cell, the status of the wife in her household (wife of a monogamous man, first wife of a polygamous man, or wife of higher rank) except when we consider polygamy as an outcome, and for the characteristics that appear as important determinants of the marriage payments, namely, education of the wife, the age at time of marriage and the type of work conducted by her father and by the groom himself.

We are not claiming that the relation between the payments and the welfare measures of the wife should be causal. As underlined in the conceptual framework, the unobserved characteristics of the wife and the husband might well affect both the existence and level of the marriage payments and the access to household resources, i.e., the bargaining position of the wife. However, it is still of interest to exhibit any regularities in these relations and to use the conceptual framework developed above to interpret them.

5.2 Results

Table 8 shows that the wife's relative access to non-food consumption in the household is positively related to the value of the *cadeau* received but not to either the bride price paid or the *bagage* brought into the household, when controlling for the wife's education and the occupation of her father and husband.³⁰ The significance of the coefficient of the *cadeau* nevertheless disappears when considering the women whose cell is not the same as that of their husbands (the first panel of table 9). In this latter sample, when looking at the financial support of the husband (the second panel of table 9), the correlation with the *cadeau* is positive and significant, including when we control for the other payments; however, here again, this is not the case for the bride price. It is of note that wives who are in a different cell than that of their husband and those who are registered with their husband differ in a number of dimensions, as shown in Table A9. Women who are not within the cell of their husband belong to richer households

³⁰Considering relative food consumption, as shown in table A11 in the appendix, we do not find any significant difference, which is linked to the fact that, as noted above, food consumption is rather equally shared within the household.

and have a lower relative consumption.³¹ These women are very often the wives of household head and are more frequently in a polygamous union. These differences might reflect the stage of life-cycle that these couples are at.

The magnitude of the association between the *cadeau* and the financial support of the husband is not negligible. A *cadeau* 100 000 CFA francs higher (approximately 190 USD in 2005)(about one standard deviation of the distribution of the *cadeau* amounts) increases the financial support of the husband by nearly 5 percentage points, i.e., 10% of the mean. This is true even when controlling for a number of variables that are likely to capture the income of the husband (household per capita consumption, husband’s occupation, wife’s father’s occupation) and for any other significant correlates of the amount of the *cadeau*. The wealth of the husband’s household of origin is probably not at play with this result, as it would also generate a correlation with the bride price. This outcome rather suggests that this correlation is driven by unobserved characteristics that explain both the importance of the *cadeau* and the financial support provided by the husband to his wife. Those unobservable variables might relate to the specificity of the match between these two persons, such as her ex ante bargaining power or the love of her husband. The correlation between the husband’s financial support and the *bagage* is also strong. This might not come as a surprise, since part of the *cadeau* can be used to fund the *bagage*. In any case, the correlation with the bride price is very low and is not statistically significant.

The amount of the *cadeau* is correlated with a lower probability of coresidence with the wife’s in-laws (Table 10). It is not significantly (but rather negatively) correlated with the probability of the husband having taken a new wife since the marriage and having thereby become a polygamist. Note that, on average, husbands take a second wife 10 years after their first marriage; thus, that the time interval we consider might be too narrow to detect a significant correlation. The results are unaltered when looking at a 15-year span (see section 6.1).³² Concerning the time interval before the first birth, we use a Cox model, including an interaction between marriage payments and time (in years), since the proportional hazard assumption is not respected (Table 11). A higher *cadeau* is associated with a longer time

³¹Table A10 in the appendix presents the same descriptive statistics for the sample of coresiding women only. The results are similar.

³²The probability of polygamy is estimated for all women who married monogamously in the first place and hence were either still in a monogamous union or were the senior wife in polygamous unions at the time of the survey.

between the time of the marriage and the first birth (since the hazard ratio is inferior to 1), which implies a lower pressure in regard to fertility. This effect decreases over time, as could be expected, since giving birth is one of the marital obligations. The *bagage* is positively correlated with the probability of coresidence with the in-laws, which might reflect the fact that it plays a role in helping the newly-wed woman to assert her independence and status within her new household.

The conceptual framework presented above gives structure to the interpretation of those results. The *cadeau* is the marriage payment for which the husband benefits from some individual margin of manoeuvre, through which he can express his kindness or endearment and/or commit to future good behaviour. This translates into rather positive outcomes for the wife, in particular to relatively good access to household resources and better living arrangements. Since we control for various observable variables in the above regressions, in particular for the per capita consumption in the household, the findings suggest that unobservable variables, such as the husband's love for his wife, indeed play a role in explaining both the level of the *cadeau* and the future welfare of the wife. Conversely, the bride price, which appears to be strongly based on social norms and rather little on individual characteristics, does not seem to correlate at all with the wife's bargaining power or welfare in her marital household. These results suggest that the *cadeau* is a more powerful predictor of the wife's position in her household than the bride price.

Table 8: Relative non food consumption of the wife's cell in the household (per capita)

	(1)	(2)	(3)	(4)
Cadeau (in millions FCFA 2005)	0.4351** (0.18)			0.4657** (0.18)
Bride price (in millions FCFA 2005)		0.1016 (0.15)		0.1290 (0.15)
Bagage (in millions FCFA 2005)			-0.0156 (0.23)	-0.1659 (0.23)
Wife with some primary education	0.0802+ (0.05)	0.0881* (0.05)	0.0905* (0.05)	0.0783+ (0.05)
Wife with secondary or superior education	0.1736** (0.07)	0.1795** (0.07)	0.1894** (0.07)	0.1654** (0.07)
Age of the wife at marriage	0.0009 (0.00)	0.0006 (0.00)	0.0003 (0.00)	0.0012 (0.00)
Log of the expenditures of the hh pc	-0.1235*** (0.03)	-0.1168*** (0.03)	-0.1139*** (0.03)	-0.1258*** (0.03)
Wife lives in a rural place	0.0426 (0.05)	0.0495 (0.05)	0.0517 (0.05)	0.0408 (0.05)
Constant	2.8539*** (0.40)	2.7812*** (0.40)	2.7622*** (0.40)	2.8680*** (0.41)
Region and time FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Controls Husband	Yes	Yes	Yes	Yes
Controls Composition	Yes	Yes	Yes	Yes
Number of married women	809	809	809	809
Dep. Var. Mean	1.04	1.04	1.04	1.04
St. Dev	0.56	0.56	0.56	0.56
R2	0.24	0.24	0.23	0.24

* p<0.10, ** p<0.05, *** p<0.01.

Note: OLS estimates. Dependent variable: ratio of the wife's cell non food expenditure per capita to that of the household.

Marriage payments amounts are expressed in millions FCFA 2005. "Other Controls" include dummies for the occupation of the wife's father and for the wife's ethnic group. "Controls Husband" include the occupation of the husband. "Controls Composition" include the number of children and the number of adults in the household and in the cell, and whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors clustered at the husband level in parentheses.

Sample: Women who are not in the cell of their husband, and who married between 1996 and 2006. Source: PSF 2006

Table 9: Consumption Outcomes (PCAP) - Wives who are not in the cell of their husband

	Relative non food consumption of the wife's cell in the household				Share of wife's cell expenditures financed by the husband			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Cadeau (in millions FCFA 2005)	0.1915 (0.22)			0.2090 (0.22)	0.5931*** (0.23)			0.5049** (0.23)
Bride price (in millions FCFA 2005)		0.0524 (0.18)		0.0647 (0.18)		0.1334 (0.16)		0.0630 (0.16)
Bagage (in millions FCFA 2005)			-0.0495 (0.24)	-0.1183 (0.25)			0.6940** (0.28)	0.5573** (0.28)
Wife with some primary education	0.1013* (0.06)	0.1043* (0.06)	0.1058* (0.06)	0.0998* (0.06)	-0.0119 (0.05)	-0.0019 (0.05)	-0.0011 (0.05)	-0.0134 (0.05)
Wife with secondary or superior education	0.2256*** (0.09)	0.2294*** (0.08)	0.2374*** (0.09)	0.2231*** (0.09)	-0.1129+ (0.07)	-0.0980 (0.07)	-0.1150+ (0.07)	-0.1407* (0.07)
Age of the wife at marriage	-0.0003 (0.00)	-0.0004 (0.00)	-0.0006 (0.00)	-0.0002 (0.00)	-0.0082*** (0.00)	-0.0086*** (0.00)	-0.0085*** (0.00)	-0.0077*** (0.00)
Log of the expenditures of the hh pc	-0.1192*** (0.04)	-0.1173*** (0.04)	-0.1154*** (0.03)	-0.1204*** (0.04)	0.0061 (0.03)	0.0129 (0.03)	0.0106 (0.03)	0.0010 (0.03)
Wife lives in a rural place	0.0038 (0.06)	0.0089 (0.06)	0.0106 (0.06)	0.0039 (0.06)	0.0773 (0.06)	0.0936 (0.06)	0.0850 (0.06)	0.0701 (0.06)
Constant	2.7230*** (0.47)	2.7043*** (0.47)	2.6914*** (0.46)	2.7308*** (0.47)	0.5997 (0.46)	0.5363 (0.46)	0.5525 (0.46)	0.6318 (0.45)
Region and marriage year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls Husband	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls Composition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of married women	503	503	503	503	503	503	503	503
Dep. Var. Mean	0.98	0.98	0.98	0.98	0.48	0.48	0.48	0.48
St. Dev	0.53	0.53	0.53	0.53	0.44	0.44	0.44	0.44
r2	0.28	0.28	0.28	0.28	0.21	0.20	0.21	0.22

* p<0.10, ** p<0.05, *** p<0.01.

Note: OLS estimates. Dependent variable, columns (1) to (4): ratio of the wife's cell non food expenditure per capita to that of the household. Columns (5) to (8): share of wife's cell expenditures financed by the husband.

Marriage payments amounts are expressed in millions FCFA 2005. "Other Controls" include dummies for the occupation of the wife's father and for the wife's ethnic group. "Controls Husband" include the occupation of the husband. "Controls Composition" include the number of children and the number of adults in the household and in the cell, and whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors clustered at the husband level in parentheses.

Sample: Women who are not in the cell of their husband, and who married between 1996 and 2006. Source: PSF 2006.

Table 10: Coresidence Outcomes

	Coresidence with in-laws	Husband in polygynous union
Cadeau (in millions FCFA 2005)	-1.8166*	-2.9133
	(1.05)	(2.75)
Bride price (in millions FCFA 2005)	0.4956	-1.9422
	(0.78)	(2.30)
Bagage (in millions FCFA 2005)	4.5567***	2.6603
	(1.47)	(3.14)
Wife with some primary education	-0.2778	-1.6730**
	(0.24)	(0.66)
Wife with secondary or superior education	-0.4844	-0.6515
	(0.39)	(0.81)
Age of the wife at marriage	-0.0483***	0.0333
	(0.01)	(0.04)
Log of the expenditures of the hh pc	-0.4500**	-0.0836
	(0.18)	(0.44)
Wife lives in a rural place	0.1177	0.5977
	(0.29)	(0.60)
Constant	5.8853**	0.1801
	(2.45)	(6.10)
Region and time FE	Yes	Yes
Other Controls	Yes	Yes
Controls Husband	Yes	Yes
Controls Composition	Yes	Yes
Number of married women	802	470
Dep. var. Mean	0.36	0.07
St. Dev.	0.48	0.25
R2	0.24	0.25
chi2	164.76	77.01

* p<0.10, ** p<0.05, *** p<0.01.

Note: Logit estimates. Dependent variables: column (1): dummy equals to 1 if the woman co-resides with the father or the mother-in-law, column (2): dummy equals to 1 for women currently in a polygamous union while having originally married as a monogamous.

Marriage payments amounts are expressed in millions FCFA 2005. "Other Controls" include dummies for the occupation of the wife's father and for the wife's ethnic group. "Controls Husband" include the occupation of the husband. "Controls Composition" include the number of children and the number of adults in the household and in the cell, and, in column (1) only, whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors clustered at the husband level in parentheses.

Sample: Women who married between 1996 and 2006. For column (2), women who married between 1996 and 2006 and who are first wives, the husband being in a polygynous union or not.

Source: PSF 2006

Table 11: First birth

	First birth
Cadeau (in millions FCFA 2005)	0.2388* (0.20)
Bride price (in millions FCFA 2005)	0.5132 (0.31)
Bagage (in millions FCFA 2005)	1.5059 (1.24)
Gift*Time	1.0655** (0.03)
Bride Price*Time	1.0384* (0.02)
Bagage*Time	0.9806 (0.02)
Wife with some primary education	1.2531* (0.15)
Wife with secondary or superior education	1.2093 (0.22)
Age of the wife at marriage	0.9695*** (0.01)
Log of the expenditures of the hh pc	0.7319*** (0.06)
Wife lives in a rural place	0.7421** (0.10)
Region and time FE	Yes
Other Controls	Yes
Controls Husband	Yes
Controls Composition	Yes
Number of married women	1973
Dep. var. Mean	33.77
St. Dev.	24.48
R2	0.04
chi2	44400.42

* p<0.10, ** p<0.05, *** p<0.01.

Note: Cox estimates. Dependent variable: number of months between marriage and first birth. Marriage payments amounts are expressed in millions FCFA 2005. "Time" is the number of year since marriage. "Other Controls" include dummies for the occupation of the wife's father and for the wife's ethnic group. "Controls Husband" include the occupation of the husband. "Controls Composition" include whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors clustered at the husband level in parentheses.

Sample: Women who married between 1996 and 2006. The number of observations corresponds for each wife to all the years since marriage and before the first birth or until survey year if still childless. Source PSF 2006

6 Robustness Analysis

The sample used in the main analysis includes all the surveyed women whose marriage took place in the 10 years preceding the survey. We chose to restrict the analysis to this time span to limit recall difficulties. We can nevertheless conduct the same analysis by extending the sample to women who were married earlier. Furthermore, the women are very heterogeneous in terms of their marriage; for a number of them, the marriage we observed was not the first one, and not all of the women coreside with their husband. These situations are not exogenous and might be associated with specific marriage payment patterns. We therefore repeated the previous analysis by varying the sample used to check the robustness of the results obtained thus far. Table 12 displays for the various outcomes the coefficients of the three types of marriage payments obtained when replicating the analysis on different subsamples. The first column repeats the main results.

6.1 Selection on the year of marriage

We first extend the sample to include all the women who married in the fifteen years before the survey was conducted. The results are extremely consistent. As shown in the second column of table 12, the *cadeau* is positively correlated with the relative non-food consumption of the wife and with the financial support of the husband for women who are the head of their cell and are not located in the same cell as their husband. The results are also similar for the other outcomes (except for the duration between marriage and first birth, where the correlation is no longer significant), e.g., the *cadeau* being linked positively with favourable welfare outcomes.

6.2 First marriages

For the main analysis of the paper, we focus on all marriages to avoid selection effects. Nevertheless, the analysis mixes two situations that can be very different, i.e., the first marriage and subsequent marriages. Indeed, second marriages are relatively frequent in Senegal, following widowhood or divorce, and women who remarry differ from women who are in their first marriage in regard to a number of dimensions (see Table A12 in the appendix). Furthermore, first marriages are characterized by a higher involvement of the family of both spouses in the match. For this reason, we expect these marriages to go hand in hand with specific characteristics in

Table 12: Wives' welfare outcomes and marriage payments, using different samples

Sample	Main	1991-2006	First marriages	Coresident
<i>Relative consumption of the wife</i>				
Cadeau (in millions FCFA 2005)	0.466** (0.18)	0.416** (0.16)	0.396** (0.19)	0.296 (0.24)
Bride price (in millions FCFA 2005)	0.129 (0.15)	0.168 (0.13)	0.103 (0.17)	0.101 (0.19)
Bagage (in millions FCFA 2005)	-0.166 (0.23)	-0.189 (0.20)	-0.279 (0.24)	-0.195 (0.28)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	1.04	0.98	1.05	1.03
N	809	1059	689	558
r2	0.24	0.21	0.24	0.30
<i>Relative consumption of the wife, different cell</i>				
Cadeau (in millions FCFA 2005)	0.209 (0.22)	0.232 (0.19)	0.116 (0.24)	-0.216 (0.25)
Bride price (in millions FCFA 2005)	0.065 (0.18)	0.064 (0.15)	0.058 (0.21)	-0.103 (0.21)
Bagage (in millions FCFA 2005)	-0.118 (0.25)	-0.023 (0.21)	-0.256 (0.27)	-0.167 (0.31)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	0.98	0.92	1.00	0.93
N	503	707	402	330
r2	0.28	0.23	0.30	0.45
<i>Share of the wife's cell expenditures financed by the husband</i>				
Cadeau (in millions FCFA 2005)	0.505** (0.23)	0.459** (0.21)	0.477** (0.24)	0.625** (0.27)
Bride price (in millions FCFA 2005)	0.063 (0.16)	-0.006 (0.13)	0.113 (0.17)	0.034 (0.20)
Bagage (in millions FCFA 2005)	0.557** (0.28)	0.384+ (0.24)	0.670** (0.31)	0.030 (0.36)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	0.48	0.48	0.52	0.60
N	503	707	402	330
r2	0.22	0.19	0.18	0.25
<i>Coresidence with in-laws</i>				
Cadeau (in millions FCFA 2005)	-1.817* (1.05)	-2.149** (1.02)	-1.967* (1.08)	-1.951 (1.26)
Bride price (in millions FCFA 2005)	0.496 (0.78)	0.358 (0.68)	0.386 (0.77)	0.027 (0.95)
Bagage (in millions FCFA 2005)	4.557*** (1.47)	4.749*** (1.34)	4.061*** (1.51)	2.643+ (1.68)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	0.36	0.35	0.41	0.46
N	802	1052	683	551
r2_p	0.24	0.23	0.21	0.32
<i>Polygamous household</i>				
Cadeau (in millions FCFA 2005)	-2.913 (2.75)	-1.368 (1.71)	-2.686 (2.91)	-0.825 (3.68)
Bride price (in millions FCFA 2005)	-1.942 (2.30)	-0.328 (1.31)	-1.342 (2.19)	-8.860 (5.84)
Bagage (in millions FCFA 2005)	2.660 (3.14)	1.221 (2.17)	2.370 (2.91)	9.781** (3.85)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	0.07	0.10	0.06	0.07
N	470	733	433	355
r2_p	0.25	0.22	0.24	0.50
<i>Hazard ratio first birth</i>				
Cadeau (in millions FCFA 2005)	0.239* (0.20)	0.580 (0.35)	0.163** (0.15)	0.181* (0.17)
Gift*Time	1.066** (0.03)	1.051*** (0.02)	1.068** (0.03)	1.084*** (0.03)
Bride price (in millions FCFA 2005)	0.513 (0.31)	0.827 (0.40)	0.834 (0.52)	0.400 (0.29)
Bride Price*Time	1.038* (0.02)	1.022 (0.01)	1.026 (0.02)	1.044** (0.02)
Bagage (in millions FCFA 2005)	1.506 (1.24)	1.028 (0.74)	2.344 (1.93)	1.695 (1.66)
Bagage*Time	0.981 (0.02)	0.995 (0.02)	0.978 (0.02)	0.992 (0.03)
Controls Individual	Yes	Yes	Yes	Yes
Mean Dep. Var.	34.68	41.81	33.55	32.53
N	1990	3009	1628	1306
chi2	44,400.42	61,349.12	128.84	100.28

* p<0.10, ** p<0.05, *** p<0.01.

Note: *First panel:* OLS, dependent variable: the ratio of the wife's cell's non-food expenditure per equivalent adult to that of the rest of the household. Equivalence scale: 0.5 per child under 15 years old and 1 per adult. *Second panel:* same as the first panel, but restricted to wives not recorded in the same cell as that of their husband. *Third panel:* OLS, dependent variable: share of wife's cell expenditures financed by the husband. *Fourth panel:* Logit, dependent variable: coresidence with the father or the mother-in-law. *Fifth panel:* Logit, dependent variable: probability of being in a polygynous union at the time of the survey while having married as monogamous. *Sixth panel:* Cox model estimates, dependent variable: number of months between the marriage and the first birth.

Marriage payment amounts are expressed in millions FCFA 2005. Controls: age and education of the wife, year of the marriage, occupation of the wife's father, wife's ethnic group, occupation of the husband, number of children (except in the last panel), number of adults in the household and in the cell, the logarithm of the household consumption per capita, and (except in the 5th panel) whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors are clustered at the husband level in parentheses.

Sample: Column (1): Women who married between 1996 and 2006. Column (2): Women who married between 1991 and 2006. Column (3): Women who married between 1996 and 2006 and were observed in their first marriage. Column (4): Women who married between 1996 and 2006 and who coreside with their husband. The second and third panels are estimated only for the wives not recorded in the same cell as their husband, and the fifth panel is estimated only for women of the first rank, whether polygamous or monogamous.. Source: PSF 2006.

terms of marriage payments.

As visible in Table A13 in the appendix, marriage payments can more often be dispensed with in the case of re-marriage. Bride price and *bagage* in particular are much less frequent in the case of re-marriage than for first marriages. By contrast, the occurrence of *cadeau* is only slightly decreased by the number of marriages.

The results on the correlation between marriage payments and the wife's welfare outcomes are presented for women in their first marriages in the third column of table 12. The results obtained on the main sample are consistent with the earlier results. The correlation between the *cadeau* and the relative non-food consumption of the wife is positive and significant in this sub-sample as well. The significance disappears when restricting the analysis to those who are registered in an independent cell³³. The correlation between the *cadeau* and the financial support of the husband remains significantly positive. For these women, the *cadeau* is also correlated with lower fertility pressure and the lower likelihood of coresidence with the in-laws.

6.3 Selection on residence status

We also test whether the results obtained hold when restricting the sample to women coresiding with their husband. Non-coresidence occurs either very early in the marriage, such as before the newlyweds are allowed to settle together (i.e., when the bride price is fully paid and the husband has the means to provide a home to his wife); when the husband commutes between his rural home and his urban job, therefore requiring two separate households; or when the wife has obtained an independent dwelling, in particular when joining a polygamous household. It is to be expected that this set of women differs from the set of coresiding women. In fact, table A14 in the appendix shows that non-coresiding women are older at the time of marriage, are more likely to reside with one of their parents and are more likely to be in a polygamous union.

In addition, the bride price and the *bagage* are more frequently exchanged when the wife is coresiding with the husband, as seen in Table A15 in the appendix. This outcome is consistent with qualitative interviews, according to which one condition for the bride to join the conjugal home is that every payment has been made. They are also larger in the case of coresidence.

³³Women in their first marriage who are not the head of an independent cell are mainly either recently married and still residing with their parents or married to a man who himself is still a member of his parental household.

Interestingly, neither the occurrence nor the amount of the *cadeau* are significantly different, according to coresidence status; this underlines that the logic explaining the amount of the *cadeau* is very different from that explaining the amount of the bride price.

The results on the relation between marriage payments and the wife's welfare are replicated for the sample of coresiding wives in the last column of table 12. They are qualitatively very similar to those obtained with the original sample. The *cadeau* is positively, although not significantly, related to the relative non-food consumption of the cell of the wife (the correlation is nevertheless negative, although not significantly different from zero, when considering only the women who are not recorded in the same cell as their husband). The *cadeau* is also still positively and significantly correlated with the husband's financial support. Qualitatively, the coefficients of the marriage payments in the regression describing the probability of coresidence with the in-laws are similar to those obtained in the main sample, even if the coefficient attached to the *cadeau* lost its statistical significance in this case as well. Fertility pressure is significantly reduced by a large *cadeau* to a similar extent as that found in the main sample.

7 Conclusion

This paper analyses the links between the different types of marriage payments and the welfare of the wife in her marital household, as measured by her access to household resources, the marital living arrangements, and the fertility pressure she faces. Using a dataset that uniquely records all the payments exchanged between the families and the future spouses at the time of marriage, we examine the multiplicity of marriage payments in Senegal and exhibit clear differences in both the way they are determined and the way they correlate with married women's welfare.

We show that the *cadeau* received directly by the wife from her husband and the bride price paid to the bride's family depart from each other in the fact that the first one is rather individualized, while the level of the bride price seems to respond to social norms that cannot easily be escaped. Our conceptual framework rationalizes how those differences translate into contrasting patterns of correlation with the wife's welfare; while there exists a clear link between the *cadeau* the wife receives from her husband at marriage and our various measures of her current welfare, no such link can be found for the bride price.

Obviously, the amounts of marital payments are endogenous; specifically, regarding the *cadeau*, it seems that the unobserved source of endogeneity is positively correlated with both the size of the *cadeau* and the woman's access to the household resources, i.e., her welfare in the household. Guided by our conceptual framework, we interpret this relationship as being mainly due to the strength of the amity or the love of the husband for his wife. As a result, because it better reflects the relation between spouses, the *cadeau* is likely to be a better proxy of the wife's bargaining power than the bride price in the context studied in this paper.

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A Appendix

Table A1: Correlation coefficients between the different marriage payments

	marriage payments		
	Bride-Price (1000 FCFA 2005)	Cadeau (1000 FCFA 2005)	Bagage (1000 FCFA 2005)
Bride-Price (1000 FCFA 2005)	1.00		
Cadeau (1000 FCFA 2005)	0.08**	1.00	
Bagage (1000 FCFA 2005)	0.25***	0.22***	1.00
Observations	809		

Note: Sample: Marriages from the 1996 to 2006. Source: PSF 2006.

Table A2: Frequency of marriage payments

	Number	Percentage	Cumulated Percentage
All type of marriage payments	260	32.14	32.14
Bride Price and Bagage but No Cadeau	116	14.34	46.48
Cadeau and Bagage but No Bride-price	45	5.56	52.04
Cadeau and Bride Price but No Bagage	126	15.57	67.61
Only a Bride Price	155	19.16	86.77
Only a Cadeau	57	7.05	93.82
Only a Bagage	10	1.24	95.06
No marriage payment	40	4.94	100.00
Total	809	100.00	

Note: reading: line 1: in 32,14% of the cases, the marriage gave rise to all types of marriage payments. Sample: Marriages having occurred between 1996 and 2006. Source: PSF 2006.

Table A3: Sample Description

Women married in the last 10 years	All	809
	Coresiding	558
	Cell's head	503
Women married in the last 15 years	All	1059
	Cell's head	720
First marriages in the last 10 years	All	689
	Cell's head	411

Note: This table presents the number of observations for each sub-sample. Source: PSF 2006.

Table A4: Married women's characteristics (marriages between 1991 and 2006)

	N	Mean	SD
Wife with some primary education	1059	0.22	0.41
Wife with secondary or superior education	1059	0.11	0.31
Age of the wife at marriage	1059	22.06	8.48
Age Difference between spouses	926	11.63	7.82
Log of the expenditures of the hh pc	1059	12.29	0.76
Wife lives in a rural place	1059	0.52	0.50
In a monogamous union	1059	0.73	0.45
In a polygamous union, first rank	1059	0.07	0.26
In a poly. union, sec. or further rank	1059	0.20	0.40
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	1059	0.98	0.52
Share of the wife's cell expenditure financed by the husband	977	0.54	0.44
Presence of in-laws	1052	0.35	0.48
Polygamous husband	1059	0.27	0.45
Number of months between marriage and first birth	981	30.53	32.06

Note: Sample: Marriages from 1991 to 2006. The information on husband's age is missing for some non-coresiding women, thus the missing observations for the age gap. The share of the wife's cell expenditures financed by the husband is only computed for women who are heading a cell. Number of months between marriage and first birth can only be computed when marriage date is precise enough. In a number of cases, only the year of marriage was provided.

Source: PSF 2006.

Table A5: Probability of Positive Marriage Payments - Coresident Wives

Contribution	Bride Price	Cadeau	Bagage
	Coresident	Coresident	Coresident
Women-to-men ratio in the department	-3.28** (1.40)	1.01 (0.78)	0.75 (0.80)
Average of the logarithm of the hh consumption per cap by department	1.93** (0.89)	-0.46 (0.54)	0.35 (0.56)
Wife is wolof	-0.17 (0.38)	0.16 (0.28)	0.47* (0.28)
Wife is poular	-0.20 (0.37)	0.52* (0.28)	0.04 (0.29)
<i>Characteristics of the Match</i>			
Couple from the same family	0.09 (0.30)	0.26 (0.23)	-0.16 (0.23)
Couple from the same ethnic group	0.15 (0.40)	-0.81** (0.32)	-0.50 (0.32)
<i>Characteristics of the Families</i>			
Professional status Wife's Father (<i>ref. independent/informal employee</i>)			
..... Farmer	0.37 (0.37)	-0.23 (0.29)	-0.55* (0.28)
..... State employed/employer	0.22 (0.40)	-0.06 (0.32)	-0.15 (0.32)
..... Other	-0.89 (1.31)	-1.43 (1.12)	0.00 (.)
Number of siblings of the wife alive	-0.09 (0.06)	0.08** (0.04)	0.03 (0.04)
Parents of the wife alive at marriage	0.58 (0.54)	0.16 (0.49)	-0.26 (0.50)
<i>Characteristics of the Wife</i>			
Education (<i>ref. no education</i>)			
..... Primary	-0.02 (0.31)	0.51* (0.29)	0.06 (0.27)
..... Secondary	0.59 (0.50)	0.28 (0.36)	0.02 (0.36)
Age of the wife at marriage	-0.04 (0.02)	-0.01 (0.02)	-0.02 (0.02)
Wife lives in a rural place	-0.30 (0.47)	-0.03 (0.33)	0.19 (0.36)
<i>Characteristics of the Husband</i>			
Professional status (<i>ref. independent/informal employee</i>)			
..... Farmer	-0.19 (0.53)	0.76** (0.33)	0.67** (0.33)
..... State employed/employer	-0.45 (0.37)	0.37 (0.30)	0.06 (0.28)
..... Other	-0.59 (0.48)	-0.06 (0.36)	0.02 (0.34)
Constant	-18.00 (11.01)	4.41 (7.05)	-4.68 (7.31)
Region and date FE	Yes	Yes	Yes
Pval_region+marriage year	0.01	0.01	0.00
N	548	558	554
Dep. Var. mean	0.85	0.62	0.62
st. dev	0.35	0.49	0.49
R2	0.14	0.12	0.13
chi2	71.70	66.09	76.57

p<0.10, ** p<0.05, *** p<0.01.

Note: Logit estimates. Dependent variables: dummies equal to 1 if the marriage payment occurred. Omitted occupation category is that of "independent or informal employee". Coefficients related to occupation dummies "inactive" and "unknown" are not displayed because they are never significant, as well as the dummy "unknown" for "Same family" and the dummy "unknown" for "Fathers with same professional status". Standard errors clustered at the husband level in parentheses.

Sample: Women married between 1996 and 2006 and who reside with their husband. Source: PSF 2006.

Table A6: Amount of Marriage Payments - Coresident Wives

Contribution	Bride Price	Cadeau	Bagage
	Coresident	Coresident	Coresident
Women-to-men ratio in the department	-151.72*** (51.44)	43.13 (49.24)	15.71 (33.37)
Average of the logarithm of the hh consumption per cap by department	50.54 (36.21)	-24.89 (32.29)	28.94 (34.35)
Wife is wolof	18.67 (17.69)	13.91 (15.46)	17.13 (14.01)
Wife is poular	0.26 (15.59)	33.77** (16.24)	-9.76 (14.18)
<i>Characteristics of the Match</i>			
Couple from the same family	-14.92 (13.56)	16.54 (12.90)	-0.02 (11.49)
Couple from the same ethnic group	26.74 (19.05)	-63.83*** (19.72)	-30.08* (16.08)
<i>Characteristics of the Families</i>			
Professional status Wife's Father (<i>ref. independent/informal employee</i>)			
..... Farmer	11.65 (13.72)	-2.37 (14.92)	-23.41* (13.24)
..... State employed/employer	39.60* (21.24)	5.13 (17.18)	-1.77 (18.12)
..... Other	-26.54 (51.11)	-124.60** (57.30)	-689.19 (.)
Number of siblings of the wife alive	0.18 (2.48)	2.18 (2.17)	0.29 (1.93)
Parents of the wife alive at marriage	54.92*** (20.42)	-6.74 (31.35)	-15.63 (25.62)
<i>Characteristics of the Wife</i>			
Education (<i>ref. no education</i>)			
..... Primary	16.36 (15.68)	30.29** (14.77)	13.48 (13.13)
..... Secondary	103.79*** (24.91)	40.29* (23.34)	36.27 (25.14)
Age of the wife at marriage	-3.75*** (0.89)	-2.44** (0.95)	-1.12 (0.85)
Wife lives in a rural place	-12.71 (18.73)	4.88 (18.21)	19.36 (15.88)
<i>Characteristics of the Husband</i>			
Professional status (<i>ref. independent/informal employee</i>)			
..... Farmer	27.83 (18.01)	56.34*** (16.90)	12.71 (12.62)
..... State employed/employer	14.63 (19.81)	33.35* (17.03)	4.62 (17.36)
..... Other	27.78 (20.49)	10.00 (17.01)	-1.24 (16.38)
Constant	-356.09 (468.28)	337.18 (421.92)	-322.08 (436.75)
sigma	132.45*** (6.57)	114.97*** (6.30)	102.87*** (7.04)
Region and date FE			
Pval_region+marriage year	0.01	0.00	0.00
N	558	558	558
Dep. Var. mean	117.03	62.35	53.54
st. dev	128.53	87.44	75.33
R2	0.02	0.02	0.02
F	3.06	1.89	.

* p<0.10, ** p<0.05, *** p<0.01.

Note: Tobit estimates. Dependent variable: amount of marriage payments (1000 FCFA 2005). Omitted occupation category is that of "independant or informal employee". Coecients related to occupation dummies "inactive" and "unknown" are not displayed because they are never significant, as well as the dummy "unknown" for "Same family" and the dummy "unknown" for "Fathers with same professional status". Standard errors clustered at the husband level in parentheses.

Sample: Women married between 1996 and 2006 and who reside with their husband. Source: PSF 2006.

Table A7: Probability of Positive Marriage Transfers, All Marriages between 1991 and 2006

Contribution	Bride Price		Cadeau		Bagage	
	All	Coresident	All	Coresident	All	Coresident
Women-to-men ratio in the department	-1.01 (0.87)	-2.43* (1.25)	0.96* (0.55)	1.16* (0.67)	0.79 (0.56)	0.76 (0.68)
Average of the logarithm of the hh consumption per cap by department	1.79*** (0.57)	1.95** (0.76)	-0.66 (0.40)	-0.71 (0.49)	0.52 (0.40)	0.65 (0.50)
Wife is wolof	-0.08 (0.24)	-0.16 (0.34)	0.04 (0.19)	0.15 (0.24)	0.15 (0.19)	-0.04 (0.24)
Wife is poular	-0.11 (0.26)	-0.28 (0.35)	0.18 (0.20)	0.50** (0.25)	0.35* (0.21)	-0.01 (0.26)
<i>Characteristics of the Match</i>						
Couple from the same family	0.23 (0.20)	0.13 (0.27)	0.49*** (0.16)	0.39* (0.20)	0.32** (0.16)	-0.02 (0.20)
Couple from the same ethnic group	-0.19 (0.27)	-0.01 (0.35)	-0.76*** (0.22)	-0.81*** (0.29)	-0.42* (0.23)	-0.23 (0.29)
Fathers with same professional status		-0.01 (0.26)		0.11 (0.18)		0.07 (0.18)
<i>Characteristics of the Families</i>						
Professional status Wife's Father (<i>ref. independent/informal employee</i>)						
..... Farmer	0.37 (0.24)	0.32 (0.31)	-0.03 (0.19)	-0.21 (0.25)	-0.02 (0.19)	-0.34 (0.25)
..... State employed/employer	0.01 (0.27)	0.16 (0.34)	0.04 (0.23)	-0.31 (0.27)	-0.09 (0.22)	-0.26 (0.28)
..... Other	-0.05 (1.02)	-0.18 (1.10)	-0.29 (0.96)	-1.60 (1.24)	-0.99 (0.71)	-1.79* (0.93)
Number of siblings of the wife alive	-0.01 (0.03)	-0.04 (0.05)	0.05** (0.03)	0.05 (0.03)	0.06** (0.03)	0.05* (0.03)
Number of siblings of the husband alive		0.03 (0.04)		0.08** (0.04)		0.06* (0.04)
Parents of the wife alive at marriage	0.26 (0.37)	0.37 (0.50)	-0.21 (0.32)	-0.28 (0.46)	0.20 (0.32)	-0.31 (0.44)
<i>Characteristics of the Wife</i>						
Education (<i>ref. no education</i>)						
..... Primary	-0.18 (0.22)	-0.23 (0.26)	0.59*** (0.19)	0.60** (0.26)	0.34* (0.19)	0.34 (0.24)
..... Secondary	0.25 (0.33)	0.38 (0.43)	0.47* (0.27)	0.28 (0.33)	0.56** (0.26)	0.30 (0.32)
Age of the wife at marriage	-0.05*** (0.01)	-0.03* (0.02)	-0.01 (0.01)	-0.01 (0.01)	-0.04*** (0.01)	-0.02 (0.01)
Wife lives in a rural place	0.33 (0.28)	-0.11 (0.41)	-0.01 (0.23)	-0.43 (0.30)	0.35 (0.22)	0.17 (0.30)
<i>Characteristics of the Husband</i>						
Professional status (<i>ref. independent/informal employee</i>)						
..... Farmer	-0.11 (0.30)	0.31 (0.45)	0.19 (0.22)	0.38 (0.29)	-0.15 (0.22)	0.19 (0.28)
..... State employed/employer	0.22 (0.25)	-0.03 (0.33)	0.22 (0.20)	0.27 (0.27)	0.15 (0.20)	0.01 (0.25)
..... Other	-0.11 (0.34)	-0.29 (0.41)	-0.14 (0.29)	-0.24 (0.33)	0.06 (0.28)	-0.22 (0.31)
Husband has been to coranic school		-0.16 (0.30)		0.04 (0.21)		0.53** (0.21)
Husb. worked at time of marriage		0.71 (0.56)		0.92** (0.45)		0.84** (0.42)
Constant	-18.60*** (7.17)	-19.72** (9.39)	7.93 (5.29)	7.26 (6.41)	-7.68 (5.31)	-10.20 (6.52)
Region and date FE						
Pval_region+marriage year	0	0	0	0	0	0
N	1059.00	764.00	1059.00	764.00	1059.00	764.00
Dep. Var. mean	0.82	0.86	0.61	0.63	0.56	0.63
st. dev	0.38	0.34	0.49	0.48	0.50	0.48
R2	0.14	0.12	0.10	0.14	0.12	0.12
chi2	131.91	92.80	116.29	102.95	127.89	110.02

* p<0.10, ** p<0.05, *** p<0.01.

Note: Logit estimates, Dependent variables: occurrence of bride price, *cadeau* or *bagage*.

Omitted occupation category is that of independant or informal employee . Coefficients related to the occupation dummies inactive and unknown are not displayed because they are never significant, as well as the dummy unknown for Same family and the dummy unknown for Fathers with same professional status . Standard errors clustered at the husband level in parentheses.

Sample: For the first, third and fifth columns, women who married between 1996 and 2006. For the second, fourth and sixth column, subsample of those who reside with their husband. Source: PSF1''''''

Table A8: Amount of Marital Transfers, All Marriages between 1991 and 2006

Contribution	Bride Price		Cadeau		Bagage	
	All	Coresident	All	Coresident	All	Coresident
Women-to-men ratio in the department	-70.38** (35.35)	-130.75*** (40.71)	-17.45 (38.92)	33.98 (38.82)	17.92 (25.63)	15.85 (26.99)
Average of the logarithm of the hh consumption per cap by department	82.62*** (26.73)	68.45** (31.53)	-21.58 (25.30)	-38.60 (27.36)	36.02 (25.13)	39.66 (27.95)
Wife is wolof	11.00 (12.85)	4.33 (15.00)	-7.08 (11.09)	5.55 (12.57)	-3.88 (10.59)	-9.30 (11.71)
Wife is poular	6.12 (12.56)	2.99 (14.18)	12.66 (12.25)	32.54** (13.86)	2.59 (11.27)	-10.10 (12.50)
<i>Characteristics of the Match</i>						
Couple from the same family	-6.03 (10.85)	-15.02 (12.45)	24.66** (9.77)	16.46 (10.60)	11.02 (8.80)	-1.57 (9.53)
Couple from the same ethnic group	12.66 (14.65)	27.75* (16.62)	-46.40*** (13.56)	-52.59*** (15.95)	-15.81 (12.48)	-7.71 (13.79)
Fathers with same professional status		20.06* (10.78)		-2.00 (9.57)		-5.17 (8.44)
<i>Characteristics of the Families</i>						
Professional status Wife's Father (<i>ref. independent/informal employee</i>)						
..... Farmer	12.37 (11.12)	1.05 (13.02)	-3.31 (10.49)	-10.06 (12.64)	-7.19 (10.28)	-16.88 (11.03)
..... State employed/employer	10.62 (16.77)	17.72 (18.57)	13.65 (13.51)	-7.87 (14.60)	-3.50 (13.89)	-4.03 (15.21)
..... Other	2.19 (44.43)	11.24 (55.04)	-24.72 (56.60)	-109.36* (64.03)	-61.73 (48.71)	-81.94 (60.43)
Number of siblings of the wife alive	1.24 (1.95)	-0.05 (2.15)	2.76* (1.67)	1.21 (1.91)	2.07 (1.50)	2.07 (1.65)
Number of siblings of the husband alive		2.62 (2.22)		5.19*** (1.88)		5.25*** (1.79)
Parents of the wife alive at marriage	41.54** (16.90)	60.88*** (18.73)	-10.99 (19.19)	-14.67 (25.66)	10.21 (19.05)	-16.12 (21.53)
<i>Characteristics of the Wife</i>						
Education (<i>ref. no education</i>)						
..... Primary	20.91* (11.59)	12.96 (13.71)	39.90*** (11.40)	28.65** (12.35)	20.24** (10.29)	14.74 (11.36)
..... Secondary	98.58*** (20.23)	82.59*** (22.52)	59.31*** (16.96)	34.52* (20.00)	49.82*** (17.81)	36.55* (21.14)
Age of the wife at marriage	-3.84*** (0.61)	-2.81*** (0.74)	-1.81*** (0.60)	-1.93** (0.77)	-2.09*** (0.56)	-0.86 (0.66)
Wife lives in a rural place	13.87 (12.91)	-2.13 (15.95)	9.76 (12.75)	-19.82 (15.35)	20.20* (11.23)	7.98 (13.28)
<i>Characteristics of the Husband</i>						
Professional status (<i>ref. independent/informal employee</i>)						
..... Farmer	9.00 (13.14)	30.80** (15.41)	23.74* (12.68)	42.77*** (14.68)	-13.72 (10.52)	2.26 (10.93)
..... State employed/employer	29.51** (14.64)	29.72* (17.43)	26.96** (12.49)	28.81** (14.02)	10.19 (12.17)	2.47 (14.07)
..... Other	20.43 (16.25)	15.28 (16.92)	-4.78 (14.06)	-2.72 (14.01)	1.40 (14.31)	-2.27 (13.94)
Husband has been to coranic school		7.14 (12.47)		17.87 (11.49)		24.55** (9.64)
Husb. worked at time of marriage		-12.02 (34.21)		68.65*** (26.56)		56.78** (22.34)
Constant	-832.22** (347.72)	-608.75 (400.18)	381.87 (328.08)	452.82 (358.24)	-442.75 (326.63)	-550.71 (355.61)
sigma	138.72*** (5.29)	132.74*** (5.78)	119.77*** (5.12)	111.09*** (5.29)	107.79*** (5.13)	99.10*** (5.70)
Region and date FE						
Pval_region+marriage year	0.00	0.00	0.00	0.00	0.00	0.00
N	1,059	764	1,059	764	1,059	764
Dep. Var. mean	113.09	120.01	62.87	62.73	50.77	55.60
st. dev	129.97	128.27	91.38	86.02	73.20	73.42
R2	0.02	0.01	0.02	0.02	0.02	0.02
F	4.99	3.13	3.14	2.37	2.99	2.13

* p<0.10, ** p<0.05, *** p<0.01.

Note: Tobit estimates, Dependent variables: occurrence of bride price, *cadeau* or *bagage*.

Omitted occupation category is that of "independent or informal employee". Coefficients related to the occupation dummies "inactive" and "unknown" are not displayed because they are never significant, as well as the dummy "unknown" for "Same family" and the dummy "unknown" for "Fathers with same professional status". Standard errors clustered at the husband level in parentheses.

Sample: For the first, third and fifth columns, women who married between 1991 and 2006. For the second, fourth and sixth column, subsample of those who reside with their husband. Source: PSF 2006

Table A9: Characteristics of the wives according to whether they are recorded in the same cell than their husband or not

Variables	Different cell	Same cell	Diff.
Household head's wife	0.61 [0.49]	0.01 [0.11]	-0.60*** (0.00)
Wife with some primary education	0.22 [0.41]	0.24 [0.42]	0.02 (0.58)
Wife with secondary or superior education	0.13 [0.33]	0.12 [0.32]	-0.01 (0.69)
Age of the wife at marriage	23.19 [8.94]	21.25 [8.26]	-1.94*** (0.00)
Age Difference between spouses	13.08 [8.56]	9.01 [5.63]	-4.07*** (0.00)
Relative non food consumption of the wife	1.00 [0.50]	1.08 [0.52]	0.08** (0.03)
Log of the expenditures of the hh pc	12.40 [0.79]	12.17 [0.75]	-0.23*** (0.00)
Wife lives in a rural place	0.52 [0.50]	0.49 [0.50]	-0.03 (0.42)
In a monogamous union	0.64 [0.48]	0.93 [0.26]	0.29*** (0.00)
In a polygamous union, first rank	0.06 [0.24]	0.00 [0.06]	-0.06*** (0.00)
In a poly. union, sec. or further rank	0.29 [0.46]	0.07 [0.25]	-0.23*** (0.00)
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	0.98 [0.53]	1.12 [0.58]	0.14*** (0.00)
Share of the wife's cell expenditure financed by the husband	0.50 [0.44]	0.72 [0.46]	0.22*** (0.00)
Presence of in-laws	0.24 [0.43]	0.55 [0.50]	0.31*** (0.00)
Polygamous husband	0.36 [0.48]	0.07 [0.26]	-0.29*** (0.00)
Number of months between marriage and first birth	27.54 [27.52]	25.63 [24.08]	-1.91 (0.33)
Number of married women	503	306	809

Note: Sample: Marriages between 1996 and 2006.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Table A10: Difference in characteristics according to whether the wife is recorded in the same cell than her husband or not - Coresiding wives

Variables	Different cell	Same cell	Diff.
Household head's wife	0.93 [0.26]	0.02 [0.13]	-0.91*** (0.00)
Wife with some primary education	0.21 [0.41]	0.23 [0.42]	0.02 (0.53)
Wife with secondary or superior education	0.11 [0.31]	0.11 [0.32]	0.01 (0.77)
Age of the wife at marriage	21.84 [7.34]	19.78 [5.49]	-2.06*** (0.00)
Age Difference between spouses	13.58 [8.50]	8.73 [5.34]	-4.85*** (0.00)
Relative non food consumption of the wife	0.95 [0.48]	1.13 [0.55]	0.18*** (0.00)
Log of the expenditures of the hh pc	12.42 [0.78]	12.20 [0.77]	-0.22*** (0.00)
Wife lives in a rural place	0.54 [0.50]	0.47 [0.50]	-0.07 (0.11)
In a monogamous union	0.63 [0.48]	0.97 [0.16]	0.34*** (0.00)
In a polygamous union, first rank	0.08 [0.27]	0.00 [0.00]	-0.08*** (0.00)
In a poly. union, sec. or further rank	0.29 [0.45]	0.03 [0.16]	-0.26*** (0.00)
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	0.93 [0.51]	1.16 [0.61]	0.23*** (0.00)
Share of the wife's cell expenditure financed by the husband	0.61 [0.42]	0.72 [0.46]	0.11*** (0.00)
Presence of in-laws	0.29 [0.46]	0.70 [0.46]	0.41*** (0.00)
Polygamous husband	0.37 [0.48]	0.03 [0.16]	-0.34*** (0.00)
Number of months between marriage and first birth	26.94 [24.87]	23.44 [22.35]	-3.51* (0.10)
Number of married women	330	228	558

Note: Sample: Women who married between 1996 and 2006 and who reside with their husband.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Table A11: Wife's Access to Household Food Consumption

	Food Expenditures of the wife cell per capita					
	Food Expenditures of the household per capita			Women not in their husband's cell		
	All women			Women not in their husband's cell		
Cadeau (in millions FCFA 2005)	0.0204 (0.04)	0.0190 (0.04)	0.0098 (0.04)	-0.0022 (0.05)	-0.0137 (0.06)	-0.0192 (0.06)
Bride price (in millions FCFA 2005)			-0.0429 (0.05)			-0.0648 (0.07)
Bagage (in millions FCFA 2005)			0.0489 (0.04)			0.0414 (0.06)
Log of the expenditures of the hh pc	-0.0011 (0.01)	-0.0033 (0.01)	-0.0026 (0.01)	-0.0066 (0.01)	-0.0087 (0.01)	-0.0071 (0.01)
Wife lives in a rural place	-0.0055 (0.01)	-0.0068 (0.01)	-0.0061 (0.01)	0.0080 (0.01)	0.0080 (0.01)	0.0087 (0.01)
Wife with some primary education		-0.0139 (0.01)	-0.0132 (0.01)		-0.0238 (0.02)	-0.0222 (0.02)
Wife with secondary or superior education		0.0150 (0.02)	0.0179 (0.02)		0.0202 (0.02)	0.0257 (0.02)
Age of the wife at marriage		0.0002 (0.00)	0.0001 (0.00)		-0.0007 (0.00)	-0.0009 (0.00)
Constant	1.0188*** (0.10)	1.0438*** (0.11)	1.0388*** (0.11)	1.0578*** (0.15)	1.1024*** (0.16)	1.0914*** (0.16)
Region and time FE	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls Husband	No	Yes	Yes	No	Yes	Yes
Controls Composition	Yes	Yes	Yes	Yes	Yes	Yes
Number of married women	807	807	807	502	502	502
Dep. var. Mean	0.99	0.99	0.99	0.98	0.98	0.98
St. Dev.	0.11	0.11	0.11	0.12	0.12	0.12
R2						
chi2						

* p<0.10, ** p<0.05, *** p<0.01.

Note: OLS estimates. Dependent variable: ratio of the wife's cell per capita food expenditure to that of the household. Marriage payments amounts are expressed in millions FCFA 2005. "Other Controls Wife" includes dummies for the occupation of the wife's father and for the wife's ethnic group. "Controls Husband" includes the occupation of the husband. "Controls Composition" includes the number of children and the number of adults in the household and in the cell and whether the wife lives in a monogamous union, is the first wife of a polygamous husband, or is of a higher rank. Standard errors are clustered at the husband level in parentheses.

Sample: Three first columns; all women married between 1996 and 2006. Three last columns: Sub-sample of those who are their cell's head and not in the cell of their husband.

Table A12: Characteristics of the wives according to the number of marriages

Variables	First Marriage	Not First Marriage	Diff.
Household head's wife	0.38 [0.49]	0.42 [0.50]	-0.04 (0.41)
Wife with some primary education	0.22 [0.42]	0.24 [0.43]	-0.02 (0.64)
Wife with secondary or superior education	0.13 [0.34]	0.07 [0.25]	0.07** (0.04)
Age of the wife at marriage	20.38 [6.00]	34.38 [11.88]	-14.01*** (0.00)
Age Difference between spouses	11.25 [7.53]	13.16 [9.30]	-1.91** (0.02)
Relative non food consumption of the wife	1.05 [0.52]	0.93 [0.40]	0.11** (0.02)
Log of the expenditures of the hh pc	12.31 [0.77]	12.33 [0.84]	-0.02 (0.83)
Wife lives in a rural place	0.52 [0.50]	0.49 [0.50]	0.02 (0.63)
In a monogamous union	0.80 [0.40]	0.44 [0.50]	0.36*** (0.00)
In a polygamous union, first rank	0.04 [0.19]	0.04 [0.20]	-0.00 (0.90)
In a poly. union, sec. or further rank	0.15 [0.36]	0.52 [0.50]	-0.36*** (0.00)
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	1.05 [0.57]	0.93 [0.45]	0.13** (0.02)
Share of the wife's cell expenditure financed by the husband	0.61 [0.45]	0.34 [0.41]	0.27*** (0.00)
Presence of in-laws	0.41 [0.49]	0.08 [0.28]	0.32*** (0.00)
Polygamous husband	0.20 [0.40]	0.56 [0.50]	-0.36*** (0.00)
Number of months between marriage and first birth	25.63 [25.05]	33.46 [31.65]	-7.82*** (0.00)
Number of married women	689	120	809

Note: Sample: Marriages between 1996 and 2006.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Table A13: marriage payments according to the number of marriages

Variables	First Marriage	Not First Marriage	Diff.
Positive Bride-Price	0.85	0.61	0.24*** (0.00)
Positive <i>Cadeau</i>	0.62	0.53	0.09* (0.06)
Positive <i>Bagage</i>	0.56	0.37	0.20*** (0.00)
Bride-Price (1000 FCFA 2005)	120.70	46.21	74.49*** (0.00)
<i>Cadeau</i> (1000 FCFA 2005)	68.00	28.72	39.28*** (0.00)
<i>Bagage</i> (1000 FCFA 2005)	51.47	27.10	24.37*** (0.00)
Number of married women	689	120	809

Note: Sample: Marriages between 1996 and 2006.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Table A14: Characteristics of the wives according to the coresidency status

Variables	Coresiding	Non Coresiding	Diff.
Wife with some primary education	0.22 [0.41]	0.25 [0.43]	-0.03 (0.31)
Wife with secondary or superior education	0.11 [0.31]	0.16 [0.36]	-0.05* (0.07)
Age of the wife at marriage	21.00 [6.72]	25.69 [11.44]	-4.69*** (0.00)
Coresides with at least one parent	0.05 [0.22]	0.39 [0.49]	-0.33*** (0.00)
Age Difference between spouses	11.60 [7.74]	11.25 [8.20]	0.35 (0.64)
Log of the expenditures of the hh pc	12.33 [0.78]	12.28 [0.77]	0.04 (0.45)
Wife lives in a rural place	0.51 [0.50]	0.51 [0.50]	0.01 (0.83)
In a monogamous union	0.77 [0.42]	0.71 [0.46]	0.07** (0.05)
In a polygamous union, first rank	0.05 [0.21]	0.02 [0.15]	0.02 (0.13)
In a poly. union, sec. or further rank	0.18 [0.39]	0.26 [0.44]	-0.08*** (0.01)
Non Food Exp. of the wife cell pcap/Non Food Exp. of the hh pcap	1.03 [0.56]	1.06 [0.54]	-0.03 (0.45)
Share of the wife's cell expenditure financed by the husband	0.66 [0.44]	0.28 [0.40]	0.38*** (0.00)
Presence of in-laws	0.46 [0.50]	0.14 [0.35]	0.32*** (0.00)
Polygamous husband	0.23 [0.42]	0.29 [0.46]	-0.07** (0.05)
Number of months between marriage and first birth	25.56 [23.95]	29.77 [30.90]	-4.21** (0.04)
Number of married women	558	251	809

Note: Sample: Marriages between 1996 and 2006.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.

Table A15: marriage payments according to the status of residence

Variables	Coresiding	Non Coresiding	Diff.
Positive Bride-Price	0.86	0.71	0.14*** (0.00)
Positive <i>Cadeau</i>	0.62	0.57	0.05 (0.19)
Positive <i>Bagage</i>	0.62	0.34	0.28*** (0.00)
Bride-Price (1000 FCFA 2005)	117.03	93.24	23.79** (0.02)
<i>Cadeau</i> (1000 FCFA 2005)	62.35	61.77	0.57 (0.94)
<i>Bagage</i> (1000 FCFA 2005)	53.54	35.22	18.31*** (0.00)
Number of married women	558	251	809

Note: Sample: Marriages between 1996 and 2006.

Standard deviations are in brackets, P-values are in parentheses and significance levels are denoted as follows: * p<0.10, ** p<0.05, *** p<0.01.