

Can't Buy Me Love? A Field Experiment Exploring the Trade-off Between Income and Caste-Status in an Indian Matrimonial Market

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Abstract

A large body of literature depicts that status-based discrimination is pervasive, but is silent on how economic incentive interacts with such discrimination. This study addresses this question by designing a field experiment in a reputable arranged-marriage market that is prone to strong caste-status based discrimination. We place newspaper advertisements of potential grooms by systematically varying their *caste* and *income* and focus on responses of higher caste females to lower caste males. The substantive finding is that despite the evidence of discrimination, discriminatory behavior of higher status females decreases with an increase in the advertised monthly income of lower status males.

Keywords: Field Experiment, Marriage Market, Discrimination

JEL Classification: C93, J12, J15

1. Introduction

The relationship between economic motive and observance of discriminatory social customs is hardly new to economists. This is implicit in the writings of Becker (1957, 1973, 1974) on discrimination and other social customs, and explicit in Arrow's essay (1972) on discrimination and Akerlof's work (1980) on the interactive relationship between economic incentives and discriminatory social customs. Since scholars like Becker, Arrow, and Akerlof have investigated the relationship between economic incentives and the prevalence of custom-based discrimination (of which status-based discrimination is an example), it is natural to consult the related empirical evidence on the impact of economic incentives on the extent of status-based discrimination. Surprisingly, the extant empirical literature is mostly silent on how economic incentives may directly interact with status-based discrimination.¹ This is atypical since one would be hard-pressed to find an issue as weighty as status based discrimination, yet our knowledge in this aspect remains oddly limited. Our study aspires to rectify this gap.

This study investigates *whether* and *what* magnitude of economic incentive can diminish the incidence of status-based discrimination by designing a controlled field experiment in an actual marketplace – a reputable *arranged* marriage market – that is

¹ There are a few laboratory studies that focus on status-based discrimination. See Ball & Eckel (1998, 1996), Ball *et al.* (2001), and Mullen *et al.* (1992). There exist a number of laboratory experimental studies that focus on identity-based discrimination. See Anderson, Fryer, & Holt (2006), Bernhard *et al.* (2006), Bouckaert & Dhaene (2004), Charness *et al.* (2007), Chen & Li (2008), Croson *et al.* (2003), Fershtman & Gneezy (2001), Glaeser *et al.* (2000), Goette *et al.* (2006), and Haslam (2004). There are also audit tests, and field and natural experiments that have been conducted in various markets and countries to detect identity-based discrimination. Some of the representative references are Ahmed (2008a), Arai *et al.* (2008), Bertrand & Mullainathan (2004), Fisman *et al.* (2008), Fryer (2007), Goldin & Rouse (2000), Jowell & Prescott-Clarke (1970), Levitt (2004), List (2004), Riach & Rich (2006). See Riach & Rich (2002) for an excellent survey on field experiments on discrimination. See Heckman & Siegelman (1993) for a critique of audit tests. An extensive summary of the regression-based literature on discrimination is contained in Altonji & Blank (1999).

conducted via newspaper advertisements. The existing literature suggests that this market might be especially prone to strong discriminatory mate-selection behavior based on social identity/status of an individual, where *caste* identity of an individual is an easily measured indicator of social status. The genesis of this discrimination can be attributed to a high-status female's concern for a decline in her social status if she engages in a marital relationship with a low-status male. Against this backdrop, we ask whether a low-status male could attempt to weaken this enduring form of discrimination by providing systematic economic incentive (in the form of high monthly groom incomes) to a high-status female so that the former's marriage proposal receives preliminary consideration by the latter, conditional on both individuals' participation in this market.

The marketplace that we utilize is a well-functioning arranged marriage market, conducted via matrimonial advertisements in a widely circulated Bengali language newspaper. Marriageable males in this market typically advertise their *caste* and *income* information, among other attributes. After these advertisements appear in the newspaper, interested families contact the advertiser, mostly in form of detailed letters, expressing their interest in that advertisement. This provides a confidential and reliable measure of "first intent" of the interested party, in this case, females. Therefore, the conjunction of an exceptionally strong status-based mate selection behavior, a reputed market for arranged marriages, and an exclusive correspondence process furnish us with a unique opportunity to investigate the main research hypothesis of our study. To the best of our knowledge, this is the first field experiment that exclusively focuses on how economic incentives can influence status-based discrimination in an actual market.²

² Hitsch *et al.* (2010) and Fishman *et al.* (2008) analyze racial preferences in the US matching markets and provide direct or indirect evidence of how much extra income a man from a specific race would have to

In order to operationalize the experiment, we create nine unique matrimonial advertisements, each representing a fictitious groom type.³ These potential grooms belong to one of the three blocks where each block contains three grooms from a given caste group. We vary the caste-status across these blocks. We consider three different caste groups - high, middle, and low, strictly ranked so in the study region. We vary the income features of grooms within a block. We consider three different monthly income levels (*i.e.*, high, medium, and low) that are considered feasible for each caste group in the study region. Furthermore, we randomly assign other characteristics relevant for this market, to all the potential grooms so that these features, on average, do not affect the behavior of responders. Thus, we construct nine groom advertisements that differ only

earn in order to get as many responses as a man from a different race. However, there is a clear difference between racial identity and caste-status. While we cannot rank racial identities, we can clearly rank castes in India on a well-agreed status hierarchy. In this sense, our study is the first one that estimates the trade-off between *status* and income.

³ We defer the discussion of how we constructed these advertisements until Section 3. We recognize that the reader may have a genuine concern about the ethical aspect of our study. We like to address this concern here. First, in principle, we could shed light on our research question by using inter-group marriage registrar data in India, if available. However, with this approach we would not have access to the corresponding income data, and as a result we cannot test the trade-off between income and discrimination. This rules out the use of actual marriage data and necessitates a field experiment. Second, the project has received approval from the University of Calgary's Ethics Board. The board weighed the costs and benefits of the project and decided in favor mainly because of the perceived benefits of the project. While the experiment involves deception, we argue that since the rejection is anonymous and there exists a very low likelihood of a second-round call-back (because of a very high response rate for each "ad"), our methodology, therefore, does not seem to impose huge psychological costs (of not getting a second-round call back) on the responder pool. On the other hand, the benefit from this study is potentially enormous. Given the fact that the lower-caste people in India are subjected to a lifetime of discrimination and exploitation (see CHRGI UN Committee Report, 2007 for details), we argue that the importance of investigating the issue at hand is significant. Moreover, given the main finding of the study that with increasing dose of economic incentives the extent of caste-based discrimination gradually diminishes, the study, therefore, provides much needed empirical support to the policies that aim to reduce the gap between income distributions of higher- and lower-caste groups in India. Third, the degree of deception involved in this experiment is much akin to that of the "audit studies" that attempt to place comparable minority and white actors into actual social and economic settings and measure how each group fares in these settings (see Heckman & Siegelman, 1993). We believe that our experiment has similar ethical tradeoffs as the literature on audit studies.

either in terms of the advertised monthly income (within a block) or in the stated caste-status (across the blocks).

Status-based discrimination is said to arise in our context if responders from a given high-caste group send significantly lower number of responses to a lower-caste groom relative to their own-caste groom despite the fact that the own-caste groom is otherwise *observationally identical* to that lower-caste groom. If the number of responses from a high-caste responder group for grooms from a given lower-caste group increases considerably with an increase in the advertised monthly income of those grooms, then we contend that the bias based on social status can be reduced in the presence of sufficient income incentives provided by individuals from the biased group.

The data provide crucial insights into the relationship between this specific form of discrimination and economic motive. Our estimates reveal that the discriminatory behavior of females from a given high-status group in this market is strong.⁴ However, the most intriguing finding is that with an increase in the advertised monthly income of grooms from a low-status group (who are otherwise observationally identical to each other), the response probability of a given high-status female responder group increases significantly. This finding extends major support to our key hypothesis that there exists substitutability between loss in caste-status and gain in terms of the groom-income on the part of higher-status females. However, the magnitude of increase in these response probabilities are quite small, as we find that per thousand Rupees increase in income of a

⁴ Banerjee *et al.* (2008) provide complementary evidence on this matter. They test the predictions of a marriage market model using data from the same matrimonial market that we employ in our experiment. However, they do not *explicitly* investigate any potential trade-off that may exist between income and caste-status like we do by systematically controlling for grooms' income and caste features. Additionally, the groom income variable in their empirical analysis is a proxy computed from stated occupational categories of grooms (in their interview data set 74% of the male advertisements do not report income).

lower-caste groom increases the probability of a higher-caste response between 0.2% to 0.5%. These low probability figures imply that the amounts of additional monthly income that lower-caste grooms need to offer to higher-caste responders to completely offset the discriminatory response patterns are enormous and according to our estimates they lie in the range of approximately Rs. 17000 to Rs. 49000.

The next section provides a short background of the Indian caste system and the specific arranged marriage market. Section 3 lays out the experimental design. Section 4 presents the results, and sheds light on the potential shortcomings of our study. The last section concludes.

2. The Caste System and the Matrimonial Market

The Indian Caste System

The Hindu society is historically divided into four main mutually exclusive, hereditary, and rankable caste groups, and the caste of an individual is a prominent indicator of his/her social status (Deshpande, 2000; Rao, 1993; Scoville, 1991; Dumont, 1970). Caste in English translates into two different concepts – the *Varna* and the *Jati*. The four distinct Varnas or castes that are mutually exclusive, hereditary, endogamous, and occupation-specific are: the *Brahmins* (priests), *Kshatriyas* (warriors), *Vaisyas* (traders & merchants), and *Sudras* (those engaged in menial jobs). However, the operational category that determines the modern social code is the *Jati* (Deshpande, 2001). *Jatis*, a mere subsets of the *Varnas*, are also castes and share the basic attribute of the *Varna*. In reality, *Varnas* provide a scale of status to which *Jatis* try to line up themselves, and *Jati* refers to the specific community to which an individual is required to

be married and forms an individual's social identity. As a result, we use the term caste in the sense of Jati as opposed to Varna in the remainder of this study.

The available empirical research on Indian marriage practices indicates that inter-caste marriages are nearly nonexistent (Munshi & Rosenzweig, 2009; Chowdhry, 2004; Anderson, 2003; Jauregui & McGuinness, 2003; Deolalikar & Rao, 1998; Driver, 1984; Reddy & Rajanna, 1984).⁵ For an upper-caste Hindu female, there exists a strong disincentive to marry a lower-caste male since husband's caste determines that of the wife and children. Thus, upper-caste females would experience a decline in their caste-status if they were to marry lower-caste males (Rao & Rao, 1980; Avasthi, 1979). An upper-caste male, in contrast, does not experience a loss of his caste membership even if he marries below his own caste. Even though lower-caste females have incentive to marry up, they face harsh pecuniary and non-pecuniary punishments if married up.⁶

Even though economic growth has weakened the direct link between caste and occupation in modern times, caste affiliation still continues to be a reliable descriptor of economic and social discrimination, even in economically and culturally progressive Indian states (Deshpande, 2001, 2000).⁷ Inability of economic progress to break the

⁵ Apart from the documented evidence, a survey conducted in 2006 by the CNN-IBN (the Indian subsidiary of CNN) found that a whopping 74% of respondents think that inter-caste marriages are unacceptable. Additionally, the same survey found that more than 72% of Indian parents think that parents should decide about children's marriage.

⁶ There exists a clear incentive for lower-caste females to marry upper-caste males to gain caste-status since husband's caste determines that of wife and children. Anderson (2003) formulates a theory in this regard that shows that in caste-based societies, an increase in wealth dispersion leads to an increase in dowry payments, whereas in non-caste-based societies similar increase in wealth dispersion has no real effect on dowry payments. Rao (1993) provides a "marriage squeeze" argument to explain the rising price of husbands in modern India, and supports his argument with survey data. One can argue that lower-caste females may also discriminate against higher-caste males depending on the status difference. However, we do *not* focus on this aspect of discrimination here because we would not get a clean measure of the trade-off on the part of lower-caste females due to the fact that the intrinsic incentive for lower caste females' to marry up is confounded with the monetary incentive (in forms of monthly groom incomes) of marrying up.

⁷ There is a striking similarity between the "aristocratic equilibrium" derived in Cole *et al.* (1992) and the strong segregation observed in the Indian marriage markets. Cole *et al.* analyze a matching institution in

caste-hierarchical equilibrium in the Indian marriage market is due to various factors. Munshi & Rosenzweig (2009) report evidence that there exists a clear tension between the social pressure to engage in intra-caste marital relations and informal economic security provided by own-caste group, especially in the absence of easy access to credit markets. Apart from social sanctions, the children of the inter-caste couple inherit the caste of the father and in reality tend to be discriminated against in various spheres of life. Thus, inter-caste marriages may occur at the cost of offspring's future status.

The Newspaper Matrimonial Market

Newspapers have long provided an effective channel through which individuals search for marriage partners in India and elsewhere (Ahuvia & Adelman, 1992; Lynn & Bolig, 1985; Reddy, 1978). A majority of the leading dailies in India publish several columns of matrimonial advertisements on a particular day of the week (usually in a weekend edition). We make use of a major Bengali language newspaper that boasts of a million-plus readership throughout India. Mostly, parents of marriageable sons or daughters place these advertisements. On an average, 1000 matrimonial advertisements are published in every Sunday edition of this newspaper. While advertisements are placed by both sides of the market, "grooms wanted" advertisements constitute approximately 63% of all advertisements posted. The newspaper charges on the basis of the total number of words put in an advertisement. Therefore, advertisements are very precise even though there is no prescribed format to follow. The characteristics most commonly

which an aristocratic equilibrium emerges where both men and women marry based on "social status" (an exogenously assigned rank, which is inherited from father to son as long as a man of a certain rank in status marries a woman of the same rank) rather than on the man's income and the woman's non-storable endowment (e.g., beauty). The equilibrium is sustained by the fear that the offsprings of mixed-rank couples will lose their status. Akerlof (1976) also builds a model to show that if the punishment of becoming an outcaste is large, then the system of caste will be held in equilibrium. A vivid account of marriage customs in India can be found in Hutton (1961).

mentioned are caste, age, height, education, occupation, income, physical appearance, and financial status of a family.⁸ The average cost of inserting a typical advertisement is somewhere between \$18- \$25 (Rs. 900 – Rs. 1200). Advertisements from a specific caste or sub-caste group are generally clubbed together in both the “brides wanted” and “grooms wanted” sections of the newspaper.

Once a family, on behalf of a male or a female identifies potential matches, they contact the advertiser either by calling a phone number provided in the advertisement, or by sending a letter to a unique PO box number that is assigned to the advertiser by the newspaper. After around two weeks from the date of publication of an advertisement, the newspaper delivers, at a nominal fee, packets of responses to the physical address of the advertiser on a regular basis until the flow of responses finally tapers out. In the absence of any appropriate measure, the success of an advertisement can typically be measured by the number of responses/letters an advertisement receives.

Mostly guardians of potential brides or grooms send in these responses. These letters generally come in the form of postcards, in-land letters (available from a typical Indian post office), and envelopes. The average cost of sending a response is Rs. 5.25 (equivalent to \$0.11), calculated from our data. A typical female response includes information such as caste, age, height, education level, occupation, skin complexion, looks, number of siblings, family size, parents’ occupations, if any of the parents is not alive, and sometimes a short description of family wealth.⁹

⁸ The literature on discrimination in marriage markets identifies two important determinants of female mate selection behavior: identity (mainly race) and income of a potential mate (see, Fryer, 2007; Levin *et al.*, 2007; Fisman *et al.*, 2006; Hitsch *et al.*, 2006).

⁹ One may suspect that the description of self-reported characteristics that advertisers/responders in this market claim to possess may suffer from widespread misreporting, and as a result one would have little faith in the quality of the data. However, the manner in which this market functions may discard such a doubt. After the first round of contact, if both parties still remain interested in each other then they decide

One may be concerned that individuals who post these advertisement are somehow ‘different’ from the population at large, and therefore this market may be subject to an adverse selection problem. However, the use of newspapers as a medium of mate selection in India is very widespread. The newspaper that we use for our study has been carrying these advertisements more than hundred years and it is the most widely prestigious newspaper in India in that language, Also, the fact that parents place in these postings for their marriageable children suggests that these are far more serious in nature than the “personal” advertisements that seek for casual short-term relationship. (See Lynn & Bolig, 1985, Austrom & Hanel, 1983 for comprehensive evidence on this issue).

3. Experimental Design

We post matrimonial advertisements for fictitious grooms in the ‘brides wanted’ category of a leading Bengali language newspaper that has been publishing matrimonial advertisements (both ‘brides wanted’ & ‘grooms wanted’) for decades in the state of West Bengal, India. The primary focus of the design is to systematically vary the groom-caste and groom-income attributes in these advertisements. The responses to these advertisements will facilitate answering our research question of how the caste status and income attributes of grooms affect the initial responses of potential brides. In order to parsimoniously vary the caste and income attributes of the grooms, we employ a 3X3 design to create nine unique advertisements i.e. we consider three caste groups and three income levels, which provides us nine unique combinations of caste and income

to meet at a mutually agreed place to further discuss other details, and introduce the potential bride to the potential groom. Since the costs of posting or writing a reply to an advertisement and arranging for a meeting are far from trivial by the Indian standard, and false reporting behavior is supposed to lead to a rejection if identified during later meetings, we would expect negligible incidence of misreporting in this market.

attributes of the grooms. We randomly assign the other groom attributes, with negligible or no variation, to all the advertisements so that these features on average do not affect the behavior of responders. Thus, we construct nine groom advertisements that differ either in terms of the monthly income or in the caste-status. Finally, adopting the correspondence test methodology (see Bertrand & Mullainathan, 2004 for one such application), we post these nine advertisements in two different editions of the same newspaper with sufficient time gap to allow for heterogeneity on the demand side. Hence, we post a total of 18 advertisements in the newspaper and measure the number of initial responses in the form of letters received from prospective brides' families for each of the nine groom types.

Construction of the Advertisements

The choice of the caste groups for the advertisements has two vital requirements. First is the identification of caste groups for each of which a considerable number of “brides wanted” advertisements appear in a typical edition of the newspaper. Second, each chosen caste group should be sufficiently distinct from the others along the caste-status hierarchy, which will induce desirable level of caste variation in the design. For this purpose we consulted the broad Jati classification system (See Table 1) available for the state of West Bengal (Risley, 1892; Bose 1958). Based on this system, we identify the following three caste groups: *Brahmin*, *Kayastha*, and *Scheduled Caste*. These groups satisfactorily meet the two requirements mentioned above. The three chosen caste groups follow a strict societal rank in the state (Harlan & Courtright, 1995) and have been documented to practice endogamy so far as arranged marriages are concerned (Gangopadhyay, 1964). Given that these caste groups also share similar cultural

backgrounds and social behavior in the study region in present times, it cannot be argued that individuals continue to marry within their caste simply because they have a strong preference for partners with the same cultural background and characteristics. From now on, we will refer to these three caste groups, *Brahmin*, *Kayastha*, and *Scheduled Caste*, as the high caste (HC), the middle caste (MC), and the low caste (LC), respectively.

The next requirement for the advertisements is that they must be representative of the ones that actually appear in the newspaper. To achieve this goal, we collected 2777 actual advertisements posted on behalf of potential grooms seeking responses from prospective brides from various randomly selected editions of the same newspaper over a course of four months in 2007. We restricted our attention to advertisements that correspond to the three chosen caste groups. Table 2 reports the summary statistics of our collected data, by each chosen caste group.

The analysis of the actual advertisements provides us with a realistic estimate of the mean monthly income of a potential groom to which we can anchor the income figures that we use for the fictitious grooms. The aggregate mean monthly income in the collected data is Rs. 15,858 (45% of all male postings mention an income figure). Whenever applicable, self-reported annual earnings were converted into a monthly figure. As expected, the self-reported mean monthly income positively correlates with the societal rank of a caste group in the study region. In addition, the monthly income for each caste group displays a high degree of variance. If we did not find, for each caste group, actual advertisements with considerable income variation, then our postings with sufficiently high or low monthly income figures (a key treatment variable) would have appeared quite unrealistic. Based on this information, we choose the following three

monthly income figures – Rs.35,000 (high income, HI), Rs.15,000 (medium income, MI), and Rs.7,000 (low income, LI) for our potential grooms. We assign these three income figures to the three potential grooms from a given caste group, one for each.

Next, we focus on the other groom characteristics for constructing our ads. The average age and height for potential grooms in the collected data are 32 years and 65 inches, respectively. The average age and height for each caste group do not differ much from the respective averages. In the light of this information, we restricted ourselves to three different age and height figures (30, 31 and 32 years for age & 64, 65, and 66 inches for height), and randomly assigned them to the three potential grooms from a given caste group, one for each. In the collected data, a surprisingly high percentage of potential grooms hold a government job (about 80% of the collected “brides wanted” advertisements mention a governmental job). Moreover, 89% of these postings do not disclose the specific nature of the government job. As a result, we restricted ourselves to this particular occupational category, and assigned this occupation to each of the nine grooms without specifying further details about the nature of the job. Approximately 79% of the collected advertisements mention an education degree, and 71% of these specifically mention the field in which the degree was obtained (*e.g.*, B.A., B.Sc., B.Tech., M.A. etc.). However, for our advertisements we only mentioned the name of a degree (*i.e.*, Masters or Bachelors) without specifying the field of study. We did not want responders’ preference for degrees in a particular field to affect their response behavior. Due to a positive correlation between educational achievement and earnings, we assigned a Masters degree to the MI and the HI grooms, and a Bachelors degree to the LI grooms. We decided not to mention any other physical characteristic of the grooms to prevent any

subjective consideration.¹⁰ Finally, a small percentage of advertisements in the collected data mention “Caste no Bar”, expressing their intent to marry outside their own caste. Our advertisements did not mention this and simply mentioned “bride wanted”. The newspaper office assigned a PO box number to each advertisement when they were submitted for publication. About 55% of the collected “brides wanted” advertisements provide a PO box, while 42% mention a phone number. We did not mention a phone number or an email address in any of the advertisements. This ensures confidentiality on our part. We did not find any major differences between the characteristics of the postings (that we collected) that included a PO box number and those that did not.

Why West Bengal?

West Bengal is one of the few states in India that has an impressive socio-political history. The state boasts of considerable achievements in the spheres of land reform, education (69.22% literacy rate, The Census of India, 2001), and has witnessed strong social and working class movements with strong anti-caste emphasis. According to Deshpande (2001), West Bengal is in the middle of the spectrum in terms of the absolute economic deprivation of scheduled castes (SC), who are at the bottom of the caste ladder – LC in our design; however in terms of the inter-caste economic disparity (SC versus ‘others’), it is one of the states with the least disparity. In case of a state with very high inter-caste economic disparity, an income of Rs.35,000 for an LC groom would be viewed as an outlier or unrealistic. Since inter-caste disparity in West Bengal is at a relatively low level, this allays any such concern. Thus, the low inter-caste economic

¹⁰ Fisman *et al.* (2006) and Hitsch *et al.* (2006) find strong evidence that physical attractiveness of individuals play a crucial role in influencing the mate selection process.

inequality documented for this state adds an important touch of realism to our advertisements, and at the same time makes the trade-off technically more feasible.¹¹

Measuring Responses to Advertisements

After two weeks from the date of publication of each batch of advertisements, the newspaper delivered the packets of responses to our physical address on a regular basis until the flow of responses finally tapered off. There was no scope for the responders to contact us directly. The responses were mostly in the form of detailed letters from guardians of the potential brides. Before describing the method for sorting out the letters, we argue why it is realistic to assume that a potential bride's family might have glanced through all the advertisements posted by us for that caste category. As mentioned earlier, advertisements are grouped under various caste and sub-caste headings, and the number of advertisements listed under each category is relatively small. Therefore, a potential bride's family, interested in males from a given caste group, can easily browse through all the advertisements posted under that caste/sub-caste category without spending a great deal of time, which in turn implies that the search cost of a family looking for a match should also be reasonably low. Therefore, it is safe to assume that a responder's reply represents a "revealed choice" on her part.

The letters were coded in the following way. To determine whether a responder and the male for whom she had written are from the same caste or not, we proceeded in

¹¹ One might argue that given the above profile of the study region, West Bengal appears to fulfill several of the conditions that would be presumably needed to support our income-caste tradeoff hypothesis and thus our conclusion may be biased. We seek to contest this view. The predominant perception in the related literature is that the caste hierarchy is so deeply entrenched in the Indian marriage practices that there may not exist any substitutability between the caste status and other matrimonial attributes. If this is indeed a true picture of the reality, then it is rather unlikely to obtain any support for our research hypothesis. The objective of this study is to test if caste-based discrimination can at all be weakened by economic incentive in the most favorable set up. Failure to find evidence in support of our hypothesis in such a favorable state would only imply that there exists little or no hope about the ability of economic progress to overcome the caste-based discrimination, at least, in the sphere of marital choices.

the following manner. If the main caste was explicitly mentioned in the letter (without any mention of the sub-caste), we used that information to place the responder in the appropriate main caste group. Thus, the responder is assumed to be interested in any of the specific sub-castes within that main caste. If a sub-caste was mentioned in the letter along with the main caste, then we placed that letter in the self-reported main caste category. For example, a self-identified Kulin Kayastha and a Pura Kayastha can be considered two different castes, even though there exists no vertical distance between the two. We treated both of them as Kayastha responders and placed them in that main caste group. Out of all the letters we received, 91% mentioned only a main caste. The rest of the letters mentioned a sub-caste as well. We did not receive a single letter that did not mention either a main or sub-caste. We believe that this sorting process does not pose any problem for our purpose because our advertisements did not mention any sub-caste. Therefore, a responder who mentions a sub-caste can safely be assumed to be interested in the main caste of the potential groom and not in the sub-caste.

The responses also included several other characteristics of the potential bride (for example, education, age, height, complexion, looks, employment status) and her family (for example, number of siblings, ownership of house, parents' occupation). Table 3 presents summary statistics of selective responder attributes.

4. Results

The nine advertisements, published in two different editions of the newspaper, elicited a total of 1366 responses. The responses were received from various parts (rural, urban, and semi-urban) of West Bengal and a few other Indian states. The analysis presented below, however, focuses only on 1123 of these responses. These are the unique

responses, where a unique response is defined as a reply received from a given responder for *only* one of the nine potential grooms.¹² We also excluded those responses that were received from responders who did *not* belong to any of the three caste groups (HC, MC, and LC) that we used in the experiment. In order to analyze potential discriminatory behavior of responders from a given caste group, it is essential that we observe their behavior towards their own-caste as well as inter-caste grooms. But, our design does not permit us to observe the own-caste response behavior of responders who do not belong to any of the three caste groups in our design, and consequently we are unable to infer anything about their potential discriminatory behavior. It is worth noting that excluding these responses from the succeeding analysis mainly results in a conservative depiction of the incidence of inter-caste response in our data and therefore should not bias the final conclusion of the study in favor of our research hypothesis.

4.1 Evidence of Caste-based Discrimination

First, we examine whether there exists evidence of caste-status based discrimination in our data. The status-based discrimination is said to arise if responders from a specific high-caste group send significantly smaller share of their responses to lower-caste grooms than their own-caste grooms, despite the fact that both types of grooms share the same advertised monthly income and nearly identical other marital attributes. Since LCR are at the bottom of the caste ladder, they do not have the

¹² The set of non-unique responses (*i.e.*, when a given responder writes for at least two different grooms, hailing from that responder's caste and/or other caste(s)) could have been quite informative about the potential trade-off between caste-status and income, had we received substantial number of such responses. However, we have only 47 non-unique observations coming from 22 responders, out of which four responders wrote to a groom of their own-caste as well as another groom from a different caste. Given the low number of such responses, we decided not to include them in the following analysis.

opportunity to discriminate as per the above definition. Hence we focus on the responses from HCR and MCR in the following analysis.

Table 4 provides the first piece of evidence. An inspection of the ‘Total’ column panel of Table 4 indicates that of the 478 HCR, 281 (59%) responded to own-caste grooms (HCGs), whereas 116 (24%) and 81 (17%) responded to the MCGs and LCGs, respectively. Thus, the proportion of HC responses is observed to steadily decrease with a decline in the groom caste-status. The behavior of MCR also exhibits a similar trend; 42% (158/374) of their responses go to the own-caste grooms (MCGs) and only 31% (116/374) to the LCGs. Therefore, these trends point towards existence of own-caste preference over lower caste grooms¹³. Do these trends for these two responder groups also exist within each monthly income category? Figure 1 portrays, for each income category, the proportion of HC responses received by the grooms distinguished by their caste identity. In each income category, HCR send the largest proportion of their responses to the own-caste groom. Figure 2 shows, for each income category, the proportion of MC responses received by the MCG and LCG. MCR send a higher proportion of their responses to their own-caste groom than the LCG. Overall, these statistics and figures depict a strong own-caste preference. Additionally, the behavior of HCR depicts that, the higher is the potential loss of status for a female, the lower seems to be her willingness to respond to a marital advertisement by a lower-caste male.

¹³ Although, the response pattern of lower caste responders to higher caste grooms is not the focus of our study, we briefly summarize the main features of their response pattern. MCR send 27% of their responses to HCG and 31% to LCG; while LCR send 11% and 30% of their responses to HCG and MCG respectively. These numbers imply that lower caste responders also have strong own-caste preference. Additionally, a specific lower caste group sends the smallest proportion of their responses to the highest caste grooms in our design, which appears counterintuitive, as there exists a strong incentive for a lower caste female to marry a higher caste groom to improve her caste status. The observed response pattern of the lower caste responders to higher caste grooms can be a combination of the status incentive and a discouragement effect that may arise due to lower expected call-back rate from higher caste grooms. The empirical identification of these effects would need data on men’s preferences, which we do not have.

To examine whether the above trends are statistically valid, we turn to regression analysis, which explain the probability of response from a given responder caste group as a function of groom characteristics represented by dummy variables for the nine groom caste-income combinations. These regressions have binary response variable indicating whether a responder sent a response to a given groom or not. A response is coded as 1 for the groom who received a response from a given responder and 0 otherwise. Hence a response from a given responder corresponds to 9 data points in a regression. Columns (1) and (2) of Table 5 present regression results focusing exclusively on HC and MC responses respectively. We have presented results from LPM for ease of interpretation. We tried logit and probit estimations as well and the results were qualitatively similar. We analyze the HCR and MCR separately so that we can compare the magnitudes of their discriminatory behavior and potential caste-income tradeoffs¹⁴. The results in column (1) indicate that for each monthly income category, the HCR are significantly more likely to respond to their own-caste groom than the potential lower-caste groom.¹⁵ Additionally, the two lower-caste grooms experience statistically identical probability of receiving a response from the HCR when both of them have either the HI or MI. However, for the LI category HCR are significantly more likely to send a response to the

¹⁴ Table 5 also presents response probability of LCR in column (3). Although LCR do not have the scope to discriminate against lower caste grooms in our design, this regression sheds light on their income responsiveness. The results depict that LCR respond significantly more to the HI groom relative to MI and LI grooms from their own caste, as expected. However, when responding to higher caste grooms, their response probability to HI groom of a given higher caste is significantly lower than that of MI or LI grooms and this decline in response probability becomes sharper as the caste gap increases, i.e. the decline is larger in case of HCG than in case of MCG. These results depict another form of trade-off as LCR appear to be willing to forgo higher groom-income for the prospect of gaining caste status when seeking alliance with higher caste grooms.

¹⁵ Hypotheses test results based on regression in column (1) – $H_0: HCG-HI = MCG-HI$, $F(1,4293) = 13.65$, $p=0.000$; $H_0: HCG-HI = LCG-HI$, $F(1,4293) = 26.67$, $p=0.000$; $H_0: MCG-HI = LCG-HI$, $F(1,4293) = 2.19$, $p=0.138$. $H_0: HCG-MI = MCG-MI$, $F(1,4293) = 32.22$, $p=0.000$; $H_0: HCG-MI = LCG-MI$, $F(1,4293) = 38.39$, $p=0.000$; $H_0: MCG-MI = LCG-MI$, $F(1,4293) = 0.31$, $p=0.576$. $H_0: HCG-LI = MCG-LI$, $F(1,4293) = 46.53$, $p=0.000$; $H_0: HCG-LI = LCG-LI$ and $H_0: MCG-LI = LCG-LI$ are rejected at 1% level of significance.

MCG than the LCG. The column (2) results indicate that for the monthly income categories HI and MI, the MCR are significantly more likely to respond to their own-caste groom than the LCG.¹⁶ For the LI category, MCR treat a LCG at par with their own-caste groom.¹⁷ Overall, these results imply that HCR and MCR display a substantially strong taste for own-caste grooms relative to the lower-caste grooms.

4.2 Evidence of the Caste-Status and Groom-Income Substitution

Having detected persuasive evidence of discriminatory behavior in this market, now we focus on the key hypothesis of our study: do responders from a higher-caste group send significantly higher share of responses to the potential lower-caste grooms as the advertised monthly incomes of these grooms systematically rises in our design?

Table 4 reveals that as the advertised monthly income of a groom of a specific lower-caste rises, the number of responses from a given higher-caste group also goes up steadily. This observation applies to all three combinations of a higher-caste responder group and a lower-caste groom in our design: HCR-MCG, HCR-LCG, MCR-LCG. For example, as the stated monthly income of a LCG increases from LI to MI to HI in our design, the number of HC responses sharply increases from 5 to 25 to 51, respectively (refer to the LCG row and its intersections with the HCR columns in LI, MI and HI panels, respectively). Figure 3 shows the proportions of responses received by the three grooms of a specific lower-caste group, who are only differentiated by their monthly

¹⁶ Hypotheses test results based on regression in column (2) – H_0 : MCG-HI = LCG-HI, $F(1,3357) = 5.49$, $p=0.019$; H_0 : MCG-MI = LCG-MI, $F(1,3357) = 3.26$, $p=0.071$; H_0 : MCG-LI = LCG-LI is rejected at 1% level of significance.

¹⁷ Can these differences in the proportions be merely due to the differences in the other attributes of the grooms (such as age and height)? We controlled for groom age and height features and found both of them statistically insignificant. Moreover, their inclusion did not influence the other coefficient estimates either. This result can be attributed to the low variability in these attributes governed by our experimental design.

income, from a given higher-caste group¹⁸. The figure reveals that the proportion of responses from a given higher-caste group sharply increases with an increase in the advertised monthly income of a given lower-caste groom. Thus, holding constant other attributes, an increase in the reported monthly income of lower-caste grooms fetches higher share of higher-caste responses.

The regression results in Table 5 further substantiate the above observations by providing statistical support. Results in column (1) show that when responding to MCGs, HCR are significantly more likely to respond to the HI than the MI or LI grooms. When responding to LCGs, HCR are significantly more likely to respond to the HI than the MI and more likely to respond to the MI than the LI groom.¹⁹ Column (2) depicts that when responding to LCGs, MCR are significantly more likely to respond to the HI than the MI or LI groom, but they are equally likely to respond to the MI and LI grooms.²⁰ Thus, the results imply that *ceteris paribus*, an increase in the advertised monthly income of lower-caste grooms fetches significantly higher share of higher-caste responses. This establishes the central result of the study that higher-caste females seem to be ready to trade-off a loss in the caste status by expressing their willingness to marry a lower-caste groom with considerably high monthly income.

4.3 Caste Status-Groom Income Substitution Estimates

¹⁸ Each proportion is computed as a ratio of the number of responses received by a specific lower-caste groom with a given income from a higher-caste group over the total number of responses received by all three grooms in that caste category from that higher-caste group.

¹⁹ Hypotheses test results based on regression in column (1) – $H_0: MCG-HI = MCG-MI$, $F(1,4293) = 16.24$, $p=0.000$; $H_0: MCG-MI = MCG-LI$, $F(1,4293) = 1.35$, $p=0.245$; $H_0: MCG-HI = MCG-LI$, $F(1,4293) = 26.26$, $p=0.000$. $H_0: LCG-HI = LCG-MI$, $F(1,4293) = 9.74$, $p=0.002$; $H_0: LCG-HI = LCG-LI$ and $H_0: LCG-MI = LCG-LI$ are rejected at 1% level of significance.

²⁰ Hypotheses test results based on regression in column (2) - $H_0: LCG-HI = LCG-MI$, $F(1,3357) = 9.39$, $p=0.002$; $H_0: LCG-HI = LCG-LI$ is rejected at 1% level of significance and $H_0: LCG-MI = LCG-LI$ cannot be rejected.

The analysis in the preceding sub-section suggests that lower-caste grooms require a substantial increase in their monthly income (compensation) in order for their advertisement to be considered by higher-caste responders at par with their own-caste grooms. Here we provide estimates of the magnitudes of these compensations. In other words, if c_1 denotes a higher caste status than c_2 , then how much additional monthly income a groom with a caste status c_2 and a monthly income of y would need in order to achieve the same probability of obtaining a response from responders with caste status c_1 , as that of a groom with a caste status c_1 and a monthly income of y ? We use the regression results of Table 5 to estimate these income compensation figures. Table 6 reports these magnitudes. Each number in that table reveals on average how much additional monthly income (in Rs. thousand) a given lower-caste male, belonging to a specific monthly income category, would need in order to compensate a given higher-caste female so that that responder replies to him with the same probability as to a groom from her own caste belonging to the same income category.²¹

Based on the tradeoff estimates presented in Table 6, several important observations are in order. First, the estimated amount of compensation needed by a HCR to consider the marital advertisement by a lower-caste groom decreases monotonically with an increase in the monthly income of a lower-caste groom. This trend clearly

²¹ How did we compute each compensation figure using information from columns (1) and (2) in Table 5? Let us focus, for example, on the number 35.95 in Table 6 that an LCG-HI would need in order to compensate an HC female. First, we compute the response probability of an HC female to an HCG-HI, which is 0.2302 (Pr = 0.0105+0.2197). We obtain the above probability figure by using the estimates from column (1) of Table 5. Similarly, we compute the response probability of an HC female to an LCG-HI, which is 0.1067 (Pr = 0.0105+0.0962). Next, we obtain the difference in the above two response probabilities, which is 0.1235. It implies that the HCG-HI has 0.1235 higher probability of receiving a response from an HC female relative to the LCG-HI. We also know from column (1) that every thousand Rupees increase in the income of an LCG increases the probability of response from an HC female by 0.0034 (the difference in HCR response probability for LCG-HI and LCG-LI divided by the income difference in thousands, *i.e.*, 28). Hence, for the LCG-HI to attain the same response probability from an HC female as that of the HCG-HI, he would need an additional monthly income of 35.95 (= 0.1235/.0034) thousand Rupees to bridge the gap of 0.1235 difference in the probability of response from an HC female.

extends major support to the main hypothesis of our study that higher income of a lower caste groom can reduce the discriminatory behavior of HCR.²² Second, the magnitudes of the additional incomes required, especially by the LCG, to elicit equivalent number of matrimonial alliances from HCR are fairly large. For example, LCG-HI would require an additional monthly income of approximately Rs. 36,000 in order to be considered at par with the HCG-HI by HCR. This means that the LCG-HI, has to almost double his monthly income in order to receive preliminary considerations by HCR at par with the HCG-HI. These massive trade-off magnitudes suggest a strong presence of caste-based discrimination in this Indian marriage market, which is very challenging to weaken with economic incentives. Third, for each groom-income category, a LCG would need, on average, higher monthly income than a MCG in order to receive as many responses as a HCG would receive from HCR. This implies that the higher is the status-gap between the responder and the prospective groom, the higher would be the compensation required from the potential groom.

4.4 The Effect of Responder Quality on Trade-off Magnitudes

The preceding evidence of higher caste females' willingness to substitute between caste-status and lower-caste groom income may generate questions like: is it the case that responders with relatively inferior marital attributes are more willing to trade-off their caste status than those with "not-so" inferior attributes? If the answer to the previous question is in the affirmative, then it is natural to ask: how does this type of responder behavior affect the magnitudes of our tradeoffs? To address the above issues, we re-

²² In contrast, the estimated amount of compensation needed by a MCR to consider the advertisement by a LCG increases monotonically with an increase in the monthly income of the grooms from that lower-caste. We do not have a grounded explanation for this trend.

estimated the regressions of Table 5, where we interact responder quality with groom types. This enables us to analyze how responder quality affects their response behavior and compute responder-quality adjusted trade-off figures.

Since each response reports a large number of responder attributes and which vary across responders, it is only appropriate to include a common and informative set of responder attributes to capture the underlying quality of a responder. As a result, we constructed a composite index of responder quality, which is constructed using the method of principal component analysis. The attributes included for constructing the index are the characteristics of the potential bride (height, age, education, self-reported skin complexion, self-reported looks, and employment status) and her family (the number of unmarried daughters, whether father is absent, own residence, and own car). The index scores from the first principal component are used to construct four quality quartiles. If the quality-index for a specific responder lies in the first quartile, then it implies that that responder belongs to the lowest quality group, and if a quality-index lies in the fourth quartile, then it implies that that responder belongs to the highest quality group. We use dummy variables, denoted as RQ1, RQ2, RQ3 and RQ4, to represent the lowest to highest quality quartiles respectively. Given that there are nine groom types in our design and four responder-quality indices, interaction of these generates a total of 36 possible combinations. We regressed the responses of a given higher-caste responder group (HCR or MCR) on 35 of these groom type–responder quality combinations (the excluded combination is the interaction of LCG-LI and RQ4). Due to space constraints we refrain from reporting the detailed results from this LPM regression analysis²³. Instead, we simply outline the main findings here. Within each responder group (HCR and MCR), the

²³ Results from these regressions are available upon request from the authors.

higher is the responder quality, the higher is the amount of compensation needed by that responder from a given lower-caste groom. This points to the plausibility of strategic behavior on the part of the responders based on their inferior marital attributes. The above result suggests that it is indeed the case that responders with relatively inferior marital attributes are more willing to trade-off their caste status than those with superior attributes in our data. We also find that the higher is the status gap between the responder and the groom, the higher is the compensation figure and the responder-quality unadjusted trade-off estimates are reasonable and not far off from the estimates that are based on models that control for responder quality.

5. Discussion

The massive literature on discrimination has successfully documented existence of status or identity based discrimination in various markets. Yet an equally important question remains empirically unexplored - how do economic incentives interact with status-based discriminatory behavior? This study amends this gap in the literature by examining the interactive relationship between caste-status based discrimination and economic motive by designing a field experiment in a reputable marriage market in India that is conducted via newspaper matrimonial advertisements. There are two major findings. First, higher-caste responders exhibit a strong liking for own-caste grooms and thereby discriminate against lower-caste grooms. Second, grooms from a given lower-caste group, who are otherwise observationally identical to each other, receive significantly higher number of responses from higher-caste females as their advertised monthly incomes go up in our design. Thus, the second result suggests that if the phenomenal economic growth in India succeeds in reducing inter-caste economic

disparity it may help in reducing caste-based discrimination in this marriage market.

How should one react to these results? We contend that there are four main sets of questions that may arise while interpreting our results. First, can supply side effects shape the response behavior of higher-caste responders toward lower-caste grooms? For example, if the proportion of marriageable age females is substantially higher than the proportion of marriageable age males within a higher-caste group, then it may compel females of a higher-caste group to seek matrimonial alliances from lower-caste grooms. Unfortunately, fine caste-based demographic data is not available in India. Hence, we cannot provide direct statistical evidence in this regard. However, given the low female to male sex ratio in India (the sex-ratio was 911 females per thousand males in 1981 in West Bengal, which can provide a rough indicator of the sex ratio in the matrimonial market we study as the average responder age was close to 25 years), if one assumes that the sex-ratios are similar in each caste group, then it is unlikely that females from a given high-caste group have written to potential lower-caste grooms simply because they did not find enough number of males within their own-caste. Nevertheless, one can argue that there may exist a shortage of high-income grooms within each high-caste group, this may have encouraged higher-caste females to respond to lower-caste grooms with relatively high income. We can allay such a concern by appealing to two factors. First, by the virtue of our experimental design, a higher-caste female who responded to the HI groom of a lower-caste group also had the option of responding to the HI groom from her own caste as all the nine advertisements appeared in the same edition of the newspaper and since advertisements from a given caste group are clubbed together, if one is primarily interested in own-caste grooms, then it would not be difficult to find the own-caste-HI

advertisement. Second, due to historical inertia, higher caste groups have higher average incomes in India (Deshpande, 2001). As a result, it will be difficult to attribute a higher-caste response for a lower-caste groom to the dearth of high-income grooms within a higher-caste group.

The second concern may relate to anticipated dowry. Although dowry is formally frowned upon in the population in question and is illegal, yet the practice of dowry continues to persist at an informal level. In the market we study, dowry is almost never mentioned in an advertisement and, if at all, it is usually discussed only in later rounds of the negotiation process. It is fair to assume that while responding to our advertisements, responders may have factored in a higher dowry for a groom with higher income. If expected dowry is the prime driver of the responses, then we would expect to observe fewer responses from a given high-caste group for lower-caste grooms with higher income. An inspection of Table 6 contradicts such a view.

The third concern is about the nature of the data that we obtain. Unlike Fisman *et al.* (2006, 2008) and Hitsch *et al.* (2010), we do not have data on final matches. We observe responses from brides' families who express their willingness to initiate a matrimonial alliance that may or may not result in a final match. Even though one may be agnostic towards characterizing a marriage market based on analysis of initial response, still it is natural to assume a positive correlation between the frequency of initial responses and the likelihood of final matches, after allowing for some level of friction in the mate selection process. Hence, despite the limitation of not observing the final match, our parameter of initial response can be a very useful proxy for capturing the extent of inter-caste marriage "intents" existing in this market.

Finally, is this market a good representation of arranged marriage markets in India? Furthermore, to what extent can the results of this study be generalized to other segments of Indian population? By focusing on newspaper advertisements, we have explored only one of the possible channels of arranged marriages. There remain several other matrimonial channels that are not studied here. Yet we believe that the channel that we study here is fairly representative as newspapers advertisements have been playing an important role in bringing together both sides of the market for several decades in India and are accessible to quite a broad section of the population. To answer the second question, the population that we have engaged in this study is educated and urban Bengali population. Hence similar results may not follow for other segments of Indian population.

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Table 1. Caste hierarchy in West Bengal

Rank	Caste Name	Sub-Groups
I	Brahmin	Kulin, Debnath, Nath, Gouriya, Baishnab, Radi etc.
II	Baidya	Lata, Kulin & Rajasree.
III	Kshatriya	Ugra, Malla, Rajput, Barga, etc.
IV	Kayastha	Kulin, Kshatriya, Pura, Karmakar, Mitra etc.
V	Baisya & Others	Suri, Baisya Saha, Teli, Modak, Swarnakar, Rajak, etc.
VI	Sadgope & Others	Kulin Sadgope, Yadav, Mahisya, Kumbhakar etc.
VII	Non-scheduled	Rajak, Bauri, Paramanik etc.
VIII	Scheduled	Namasudra, Rajbanshi, Malo, Sudra etc.

Table 2. Summary statistics of the “brides wanted” advertisements collected from the newspaper

	Aggregate	HCG	MCG	LCG
Total Observations	2777 (100%)	1368 (49%)	768 (28%)	641 (23%)
<i>Monthly Income (Rs.)</i>				
Observations	1261	527	375	359
Mean	15,858	17,232	16,714	12,949
Standard Deviation	9,894	8,376	12,317	8,421
<i>Age (Years)</i>				
Observations	2776	1368	768	640
Mean	32	32	31	32
Standard Deviation	4.23	4.35	4.38	3.87
<i>Height (Inches)</i>				
Observations	2777	1368	768	641
Mean	64.59	64.41	65.33	64.08
Standard Deviation	3.26	3.12	3.21	3.45
Government Job Mentioned	2220 (79.94)	1100 (80.41)	591 (76.95)	529 (82.53)
P.O. Box Mentioned	1529 (55.06)	802 (58.63)	381 (49.61)	346 (53.98)
Caste No Bar Mentioned	104 (3.75)	45 (3.29)	15 (1.95)	44 (6.86)
Income Figure Mentioned	1261 (45.41)	527 (38.52)	375 (48.83)	359 (56.01)
Looks Type Mentioned	1619 (58.30)	779 (56.94)	406 (52.86)	434 (67.71)
Education Level Not Mentioned	571 (20.56)	275 (20.10)	196 (25.52)	100 (15.60)

Note: Figures in parentheses denote advertisements mentioning that specific feature as a percentage of the total number of advertisements collected for that column category. HCG, MCG, LCG denote grooms from HC, MC, LC groups.

Table 3. Summary statistics of selected self-reported attributes of responders

	Aggregate	HCR	MCR	LCR
Number of Responses	1123	478	374	271
	100%	42.56%	33.30%	24.14%
Girl Height (Inches)	63.2	63.4	62.9	63.5
	(2.83)	(2.98)	(2.79)	(2.55)
Girl Age (Years)	25.1	25.5	24.9	24.7
	(2.27)	(2.37)	(2.17)	(2.09)
Girl Working	192	89	52	51
	17.1%	7.9%	4.6%	4.5%
Girl Education < Bachelors	93	24	37	32
	8.3%	2.1%	3.3%	2.8%
Girl Education = Bachelors	632	267	205	160
	56.3%	23.8%	18.3%	14.2%
Girl Education > Bachelors	394	185	131	78
	35.1%	16.5%	11.7%	6.9%
Fair Complexion	379	168	130	81
	33.7%	14.9%	11.6%	7.2%
Medium Fair Complexion	318	125	93	100
	28.3%	11.1%	8.3%	8.9%
Very Fair Complexion	333	123	128	82
	29.7%	11.0%	11.4%	7.3%
Fairly Good-Looking	644	299	196	149
	57.3%	26.6%	17.5%	13.3%
Medium Good-Looking	239	73	100	66
	21.3%	6.5%	8.9%	5.9%
Very Good-Looking	82	36	22	24
	7.3%	3.2%	2.0%	2.1%
Number of Siblings	2.14	2.19	2.16	2
	(0.96)	(1.01)	(0.95)	(0.86)
Unmarried Sisters	1.13	1.15	1.12	1.1
	(0.34)	(0.36)	(0.34)	(0.30)
Father Absent	77	24	25	28
	6.9%	2.1%	2.2%	2.5%
Own House/Apt	307	116	111	80
	27.3%	10.3%	9.9%	7.1%

Note: Count and percentages (out of 1123 total responses) reported for categorical variables. Mean and standard deviation (in parentheses) reported for quantitative variables. HCR, MCR, LCR denote responders from HC, MC, LC groups.

Table 4. Number of responses received by each groom from each responder caste group

Groom Income		HI			MI			LI			Total		
Responder Caste		HCR	MCR	LCR	HCR	MCR	LCR	HCR	MCR	LCR	HCR	MCR	LCR
Groom Caste	HCG	110	27	3	85	34	7	86	39	21	281	100	31
	MCG	66	83	10	29	46	39	21	29	32	116	158	81
	LCG	51	58	69	25	31	45	5	27	45	81	116	159
	Total	227	168	82	139	111	91	112	95	98	478	374	271

Table 5. Probability of response as a function of groom attributes (LPM estimates)

	(1)	(2)	(3)
	HCR	MCR	LCR
HCG-HI	0.2197*** (0.0198)	-0.0000 (0.0190)	-0.1550*** (0.000)
HCG-MI	0.1674*** (0.0181)	0.0187 (0.0200)	-0.1402*** (0.000)
HCG-LI	0.1695*** (0.0182)	0.0321 (0.0207)	-0.0886*** (0.002)
MCG-HI	0.1276*** (0.0165)	0.1497*** (0.0253)	-0.1292*** (0.000)
MCG-MI	0.0502*** (0.0119)	0.0508** (0.0217)	-0.0221 (0.477)
MCG-LI	0.0335*** (0.0105)	0.0053 (0.0193)	-0.0480 (0.110)
LCG-HI	0.0962*** (0.0149)	0.0829*** (0.0230)	0.0886** (0.011)
LCG-MI	0.0418*** (0.0112)	0.0107 (0.0196)	-0.0000 (1.000)
Constant	0.0105** (0.0047)	0.0722*** (0.0134)	0.1661*** (0.000)
Observations	4302	3366	2439
R ²	0.05	0.02	0.058

Note: Robust std. errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. Of the nine groom types, the excluded groom type in the regression is LCG-LI.

Table 6. Caste-income tradeoff estimates based on the regression analysis

Groom Income		HI	MI	LI	Mean (Std.Dev)
Responder Caste - Groom Caste	HCR-MCG	27.40	34.87	40.47	34.25 (6.55)
	HCR-LCG	35.95	36.56	49.33	40.61 (7.56)
	MCR-LCG	22.56	17.16	0.00	13.24 (11.78)

Note: Figure in each shaded cell denotes on average how much additional monthly income (in Rs. thousand) a given lower-caste groom, belonging to a specific income category, would need in order to compensate a given higher-caste responder group so that that responder responds to him with the same probability as to a groom from her own caste belonging to the same income category.

Figure 1. Proportion of HC responses received by grooms from three different caste groups within each groom income category

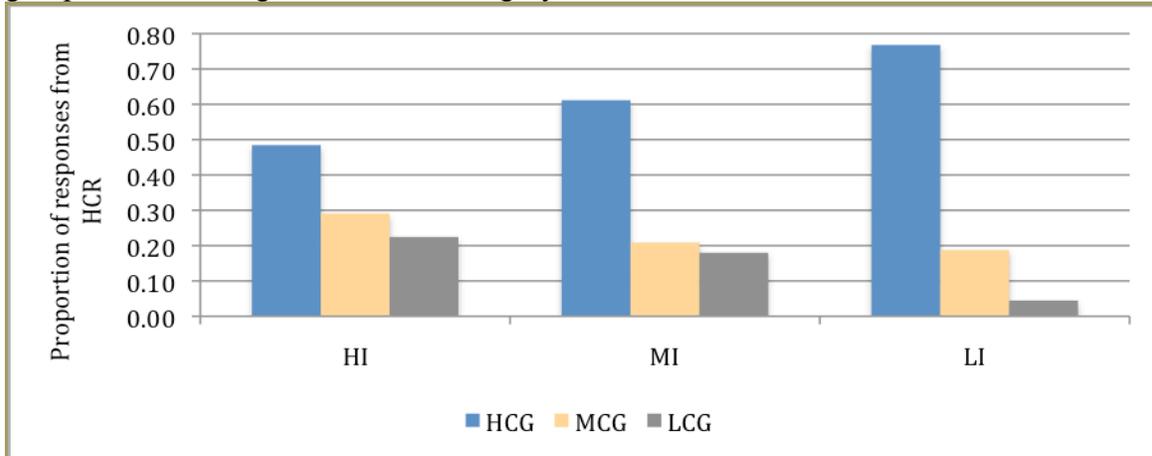


Figure 2. Proportions of MC responses received by the MCG and the LCG within each groom income category

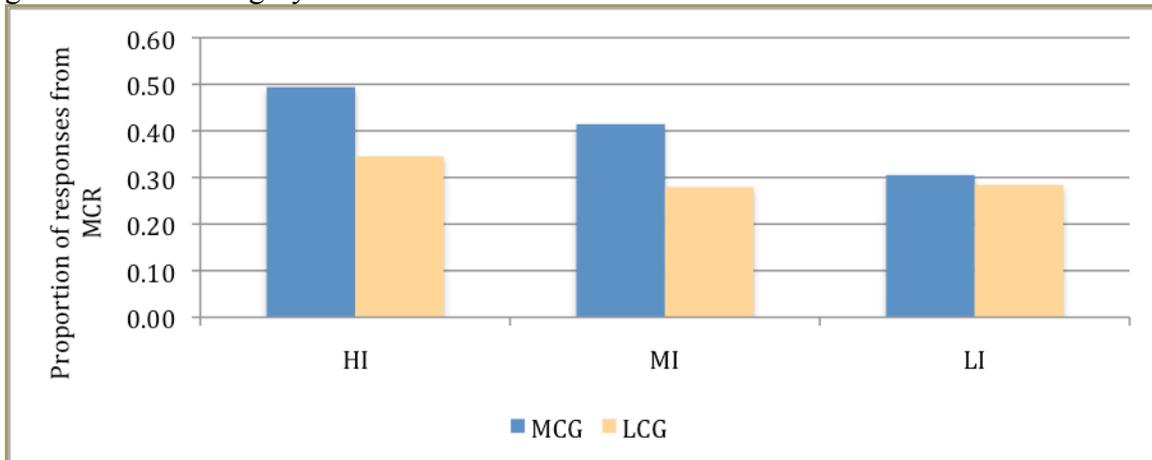


Figure 3. Proportions of responses received by grooms with three different incomes for each higher caste responder – lower caste groom combination

