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September 10, 2026

NBER Workshop on Network and Development Economics
Application Committee
National Bureau of Economic Research
Cambridge, MA

Re: Application for the NBER Workshop on Network and Development Economics, December 5, 2026

Dear Professors Breza, Viviano, and Chandrasekhar,

I am writing to apply to participate in The National Bureau of Economic Research Workshop on Network and Development Economics, 2026. I am a PhD candidate in Economics at Trinity College Dublin in my final year of doctoral study, working on the economics of marriage markets and household decision-making in India. I believe this workshop would offer an invaluable opportunity to discuss my ongoing research with both senior researchers and other early-career scholars working at the frontier of this field.

Please find enclosed my curriculum vitae, a statement of my motivation for attending and current research interests, and my working paper entitled "Spatially Asymmetric Income Shocks and Male Marriage Timing in India". If shortlisted, please contact

Prof Nicola Fontana,
Assistant Professor in Economics,
Department of Economics,
Trinity College Dublin.
Email: Nicola.Fontana@tcd.ie

Thank you very much for your consideration. Please do not hesitate to contact me if you require any further information.

Sincerely,
Doireann O'Brien

Doireann O'Brien

PhD Candidate in Economics
Trinity College Dublin
obried26@tcd.ie

Education

Trinity College Dublin
PhD in Economics 2023 – 2027
Completed PhD courses: Econometrics, Micro Economics, Long-run Development, Labour Economics, Research Integrity

MSc in Economics 2020 – 2021
Awarded 2021 Terence Gorman Prize for Highest Grade in MSc Economics

BA in PPE, Major in Economics 2014 – 2018

Working Papers

"Is Child Marriage an Unintended Consequence of a Ban on Sex-Selective Abortion?"
Revise and resubmit, Economic Development and Cultural Change, August 2026
Awarded 2025 Best Paper by a Young Economist, Irish Economics Association

Works in Progress

"Spatially Asymmetric Income Shocks and Male Marriage Timing in India"

"Telangana Graduation with Inclusion and Livelihoods Program (TGILP) Evaluation." with Selim Gulesci and Maria Sofia Casabianca Gonzalez *AEA RCT Registry*. July 27. `https://doi.org/10.1257/rct.19120-1.0`

"Targeting Extremely Vulnerable & Deprived Households through the Graduation Approach Integrated into Community Institutions in Meghalaya" with Selim Gulesci and Anisha Sharma

Conference & Seminar Presentations

Network for Ireland-based Development Economists 2026

Irish Economics Association Conference 2025

Conference on Economic Growth and Development, Indian Statistical Institute, New Delhi 2024

Service

Refereeing: Journal of Development Economics 2026

Teaching

Teaching Assistant, The Economy of Ireland (ECU22021, ECU22022) 2023–2025
Trinity College Dublin, *Awarded "2024 Best Teaching Assistant in Economics"*

Associate Lecturer 2021–2023
Institute of Public Administration, Ireland

Statement of Motivation and Research Interests

I am applying to the NBER Workshop on Network and Development Economics because my current research examines how income shocks propagate through the spatially connected sides of local marriage markets. My paper, "Spatially Asymmetric Income Shocks and Male Marriage Timing in India," provides nationally representative empirical evidence that negative income shocks expedite male marriage in India. More importantly, it shows that marriage-market responses depend not only on the severity of income shocks, but also on their spatial distribution across the two sides of the marriage market.

The seminal work linking income shocks to marriage timing in India has relied on earlier waves of the National Family and Health Survey (NFHS), which did not provide geographic coordinates, limiting the ability to study the spatial and network dimensions of marriage markets. Moreover, rainfall data were available only at relatively coarse spatial resolutions. For example, Corno et al. (2020) measure income shocks in India using average rainfall aggregated to the district level, an administrative unit that can span several thousand square kilometers. The recent availability of high-resolution gridded rainfall data, combined with the geo-coding of the latest waves of the NFHS, creates new opportunities to study these spatial dimensions. At the district or other coarse spatial levels, shocks affecting the groom side and the bride side of the marriage market are necessarily conflated, making it difficult to distinguish their separate effects. In contrast, high-resolution geo-coded data allow these shocks to be measured separately and their distinct effects to be identified.

I exploit the fact that, under patrilocal norms, grooms and the brides they marry typically reside in different villages to distinguish shocks affecting a groom's own village from shocks affecting the wider set of villages from which his bride is likely to be drawn. In patrilocal settings such as India, marriage markets are therefore not local in the conventional sense: grooms and the pool of potential brides from which they draw are typically distributed across multiple nearby villages, connected through the migration that occurs at marriage. This structure provides a natural setting for studying how economic shocks transmit across village-level connections and how the geographic distribution of those shocks shapes marriage-market outcomes.

This perspective closely connects my research to the network and development economics literature. Understanding how economic shocks propagate through geographically connected marriage markets requires both a network perspective on the formation of social and economic links and empirical strategies capable of exploiting fine spatial variation. I would greatly value the opportunity to present this work to researchers who have shaped how economists study networks in developing-country contexts, and to learn from the methodological frontier represented by both the senior researchers and the other early-career participants.

Spatially Asymmetric Income Shocks and Early Male Marriage in India

Doireann O'Brien

August 2026

I show that exposure to negative income shocks causes boys and men in India to marry younger and that this effect depends on the extent to which potential brides are also exposed. I adapt an equilibrium model of the marriage market from Corno et al. (2020) to allow for the grooms' and brides' sides of the marriage market to experience distinct, rather than shared, aggregate income realizations, since prospective spouses typically reside in different locations prior to marriage in patrilocal settings. The model predicts that a negative shock on the groom's side accelerates male marriage under dowry, and that this is attenuated by a concurrent shock to brides' households who respond by delaying marriage to smooth consumption (Corno et al., 2020). To test this, I exploit local drought exposure as a source of exogenous variation in the groom's household income, and widespread drought conditions in areas within a surrounding radius as a proxy for economic conditions faced by the brides' side of the market. I show that exposure to local drought increases the annual hazard of first marriage among boys and men by 9.8% across ages 15–40, and by 17.8% before age 21, but that these effects are offset by drought coverage in surrounding areas. I provide the first nationally representative empirical evidence that negative income shocks expedite male marriage in India and that marriage market responses depend not only on the severity of income shocks but also on their spatial distribution across the two sides of the market.

1 Introduction

A growing literature shows that marriage payments shape how income shocks affect the timing of marriage. In dowry-paying societies, negative income shocks are found to delay daughters' marriage, as families postpone marriage to smooth consumption (Corno et al., 2020; Corno and Voena, 2023). Yet the relationship between income shocks and male marriage timing remains largely unexplored. Moreover, existing work typically studies shocks shared by both sides of the marriage market, capturing only their combined effect on (usually female) marriage timing. Analysis that isolates a shock to the groom's side from a shock to the bride's side is lacking. This paper addresses both gaps. I exploit the fact that India's strongly patrilocal marriage norms mean grooms and potential brides reside in distinct locations prior to marriage, which allows me to disentangle groom-side income

shocks from bride-side income shocks within the local marriage market. In doing so, I show how the spatial organization of marriage markets shapes the transmission of economic shocks to marriage outcomes.

In this paper, I ask whether negative income shocks accelerate marriage among boys and men in dowry-paying settings, consistent with households using the early marriage of sons (to receive dowry sooner) as a coping strategy against income risk. Because marriage timing is shaped by the clearing of the marriage market, I study how the groom-side response depends on bride-side shock exposure, since the marriage of girls is typically delayed in line with their own consumption smoothing incentives (Corno et al., 2020).

To formalize these ideas, I extend the theoretical model in Corno et al. (2020) by allowing the bride's and groom's sides' incomes to vary independently, to allow for the fact that in patrilocal societies like India, brides and grooms are typically drawn from different villages. This two-location version of the model predicts that, under dowry, male marriage timing responds unambiguously to a negative income shock affecting only one side of the market: a negative shock to only the groom's side accelerates male marriage, while a negative shock to only the bride's side delays it. When both sides of the marriage market are shocked simultaneously, this prediction collapses to the original result in Corno et al. (2020), where the direction of effect is not immediate from the model's primitives alone and can only be signed under additional conditions.

To test this prediction, I pool the men's interview data from the 2016 and 2021 waves of India's National Family and Health Survey (NFHS), yielding a nationally representative sample of 193,825 men born between 1960 and 2005. Using the geographic coordinates provided in NFHS, I combine this data with the Climate Hazards InfraRed Precipitation with Station (CHIRPS) dataset, which provides rainfall at a high resolution of $0.05^\circ \times 0.05^\circ$(approximately 5km $\times$ 5km) from 1981 to near-present. Building on the empirical strategy of Corno et al. (2020), I develop a novel approach that exploits patrilocal cultural norms in India. Patrilocality — the kinship practice whereby a woman relocates to live with her husband's family upon marriage — characterizes India strongly (Chiplunkar and Weaver, 2023; Bau, 2021; Corno et al., 2020). Marriage migration distances are typically short: the median travel time for a married woman to visit her natal village is two hours (IHDS, 2005), and Rosenzweig and Stark (1989) estimate a mean marriage migration distance of 30km. Potential brides therefore usually live outside the groom's village, but in close proximity to it, prior to marriage. I measure historical income shock exposure for the man's household using the drought history at his interview location, since men rarely migrate for marriage and so typically continue to reside where they grew up regardless of marital status. A second variable, the surrounding drought proportion, captures the share of grid cells within a 30 km radius of his location that also experienced drought that year, capturing the extent to which potential brides were simultaneously affected. Estimating a discrete-time hazard model of first marriage as a function of local drought, the surrounding drought proportion, and their interaction allows me to separately identify the effect of a shock localized to one side of the market from that of a joint shock affecting both sides of the marriage market, from the perspective of each groom.

The results support the model's predictions: A localized drought significantly raises the annual hazard of male marriage by 9.8% across ages 15-40, and by 17.8% among child-marriage ages below the legal threshold of 21. The interaction between local and surrounding drought is consistently negative, suggesting that a local shock's effect on male marriage is eroded as the shock becomes more widespread. The linear combination of all three coefficients, the total effect of a joint shock affecting both the groom's local community and the entirety of the surrounding radius where potential brides likely reside, is statistically indistinguishable from zero across specifications. A localized shock experienced by the groom's household accelerates marriage whereas a joint shock across the marriage market does not, in line with the model's predictions.

This paper contributes to three strands of literature. First, it extends the literature on how marriage markets respond to income shocks. Foundational theoretical models conceptualize marriage as a matching market in which transfers such as dowry equilibrate the supply and demand for spouses (Becker, 1973, 1974, 1981; Botticini and Siow, 2003; Anderson, 2007). Building on these theories, Corno et al. (2020) show that age at marriage is another margin through which marriage markets adjust, with drought-induced income shocks delaying female marriage in dowry-paying societies. Corno et al. (2020) focus on overall marriage market responses to drought as an aggregate income shock at district level in India and therefore do not distinguish between shocks affecting grooms and those affecting brides distinctly. Leveraging the strength of patrilocality in India and high-resolution rainfall data, I extend their framework by distinguishing between income shocks which are localized to the groom's location and more widespread shocks that also affect the surrounding areas from which potential brides are drawn. I show that this distinction is consequential: a localized drought in the groom's location accelerates male marriage, whereas a similar drought renders the effect indistinguishable from zero once it extends to neighboring bride-supplying areas. This finding echoes the broader insight from the risk-sharing literature that idiosyncratic and aggregate shocks have distinct effects on household behavior (Townsend, 1994, 1995; Hoogeveen et al., 2011). This paper shows that marriage market responses depend not only on the severity of income shocks but also on their spatial distribution across the two sides of the market.

Second, this paper contributes to the literature on household coping strategies against income risk by identifying the acceleration of sons' marriages as one such strategy in a dowry-paying context. A well-established body of work documents a range of strategies utilized by the poor to cope with income volatility, including transfers through family and kinship networks (Rosenzweig, 1988; Fafchamps and Lund, 2003; De Weerdt and Dercon, 2006; Angelucci et al., 2018), livestock sales (Fafchamps et al., 1998; Kazianga and Udry, 2006), and temporary migration (Morten, 2019). Within this literature, a smaller body of work identifies marriage timing as a coping strategy in settings with marital transfers, focusing almost exclusively on girls and women (Corno et al., 2020; Corno and Voena, 2023; Hoogeveen et al., 2011). In contrast, evidence on male marriage timing remains sparse. While Corno and Voena (2023) examine the effects of adverse rainfall shocks on both boy and girl child marriage in Tanzania, they find no evidence that such shocks affect marriage

among boys. Importantly, Khanna and Kochhar (2023) provide the first evidence that negative income shocks may reduce male age at marriage in a dowry-paying society using a case study of a flooding event in Bihar. Building on this work, I provide the first nationally representative evidence that negative income shocks accelerate male marriage across India.

Third, this paper adds to the literature on the role of culture and social norms in shaping economic behavior (Platteau, 2000). A rich body of work in this area has long identified how specific cultural practices, such as polygyny (Jacoby, 1995; Tertilt, 2005), marriage payments (Anderson, 2007; Anderson and Bidner, 2015), and caste (Anderson, 2003) shape household decisions, the efficacy of policy and broader development outcomes. Kinship norms, such as patrilocality, have more recently been identified as a key element of culture with distinct economic relevance: Bau (2021) shows that patrilocal and matrilocal norms shape parents' incentives to invest in the human capital of the children who traditionally co-reside with them, and Bau et al. (2026) show that dowry payments themselves adjust to compensate parents for the old-age support they lose when patrilocal co-residence is disrupted by sons' migration. I contribute new evidence about how cultural norms, such as the direction of marriage payments and dominant kinship traditions interact to determine how economic shocks translate into marriage market outcomes.

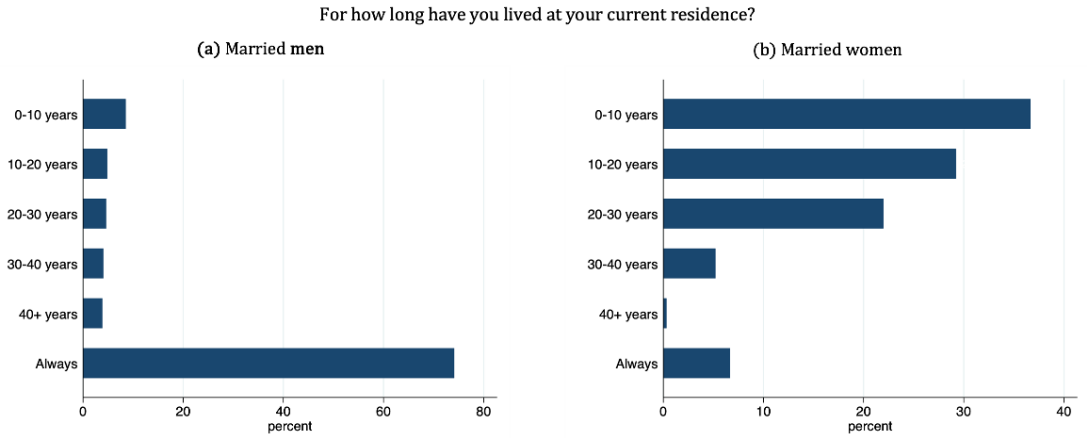
The remainder of the paper is organized as follows. Section 2 discusses the background, Section 3 explains the theoretical model; Section 4 outlines the empirical approach; Section 5 describes the data; Section 6 presents the empirical results; and Section 7 concludes.

2 Background

In this section, I provide some background on marriage migration and kinship in India. While kinship norms vary across India, the practice of women relocating to live with the husband's family upon marriage, known as patrilocality, has historically been dominant according to anthropological and demographic research (Ember and Ember, 1971; Dyson and Moore, 1983; Chakraborty and Kim, 2010). The practice of patrilocality remains widespread in India today: over 90% of couples reside with the husband's family after marriage and 85% of women marry someone from outside their own village (Chiplunkar and Weaver, 2023). Patrilocal kinship is also evident in India's National Family and Health Survey (NFHS), which asks married men and women how long they have lived at their current residence: married women report substantially shorter durations of residence than married men as shown in Figure 1, consistent with women relocating upon marriage while men remain in their natal location.

Importantly, this migration occurs over relatively short distances. Rosenzweig and Stark (1989) estimate that the average distance between a woman's post-marital residence and her pre-marital home is 30 km, and data from the India Human Development Survey (2005) show that the median travel time to a woman's pre-marital home is two hours. Similarly, Chiplunkar and Weaver (2023) find that 78.3% of married women migrated within the same district for marriage. Marriage markets in India therefore operate locally: prospective brides are drawn from villages close to the groom's own community.

Figure 1: Duration living at current residence for married and men



Source: India National Family and Health Survey 2016 and 2021

Together, these patterns motivate the theoretical model and empirical strategy developed in this paper. Because grooms remain in their natal location while prospective brides are drawn from a geographically distinct but proximate area, drought-induced income shocks realized in a groom's own location may be different from income shocks affecting the pool of prospective brides. To capture this feature in the framework which follows, I allow economic conditions facing the grooms' and brides' side of the marriage market to differ.

3 The Model

In this section, I adapt the equilibrium model of a marriage market with dowry as the marriage payment from Corno et al. (2020) to study how income fluctuations affect male marriage timing.

The model's set-up is identical to that of Corno et al. (2020): There is a unit mass of households with a daughter and a unit mass of households with a son. There are two periods which correspond to two life stages, childhood (t=1) and adulthood (t=2). The discount factor is denoted by δ. Markets are incomplete and there is no borrowing nor saving. Households have Constant Relative Risk Aversion utility $u(c) = \frac{c^{1-\gamma}}{1-\gamma}$ over consumption in each period, with $\gamma \leq 1$. Male and female children's net contributions to the household budget constraint are w_1^m and w_1^f respectively. The society is modelled as patrilocal, meaning that, upon marriage, women move to the grooms family and contribute to its budget. The dowry payment $\tau_t < 0$ is a transfer from the bride's household to the groom's household.

Household income is equal to $y_t + \epsilon_t$, where aggregate income y_t can be high or low with equal probability each year. In the original model y_t is common both to the households with daughters and to the households with sons. Building on this, I allow the bride's households and the groom's households to experience distinct income realizations, y_t^f and y_t^m. This

reflects the fact that prospective spouses reside in different locations prior to marriage under patrilocality and may therefore be exposed to distinct local income shocks. Here, just like in the original model, idiosyncratic income ϵ_t is identically and independently distributed according to pdf f() and cdf F().

$U_t^s(b_t \mid M_{t-1})$ is the utility in period $t = 1, 2$ of the family with child $s = f, m$, depending on whether their child marries in period 1 ($b_1 = 1$) or marries in period 2 ($b_2 = 1$) or never marries ($b_1 = 0, b_2 = 0$). The variable M_{t-1} is a state variable that takes value 1 if the person is married at the beginning of period t and 0 otherwise. The expected value of being unmarried at the start of period 2, given income uncertainty and for a fixed transfer τ_2^*, is defined as $E[V_2^s(M_1 = 0)]$. The expected value of being married at the start of period 2, given income uncertainty, is defined as $E[V_2^s(M_1 = 1)]$.

In the first period, the payoffs are

$$U_1^f(b_1 \mid M_0 = 0, y_1^f, \epsilon_{1i}, \tau_1) = u\left(y_1^f + \epsilon_{1i} + w_1^f + b_1(\tau_1 - w_1^f)\right) + \delta\,\mathbb{E}\left[V_2^f(M_1)\right]$$
$$U_1^m(b_1 \mid M_0 = 0, y_1^m, \epsilon_{1j}, \tau_1) = u\left(y_1^m + \epsilon_{1j} + w_1^m - b_1(\tau_1 - w_1^f)\right) + \delta\,\mathbb{E}\left[V_2^m(M_1)\right]$$

A household will want to have their son or daughter married in the first period if and only if

$$U_1^s(b_1 = 1 \mid M_0 = 0, y_1^s, \epsilon_1, \tau_1) > U_1^s(b_1 = 0 \mid M_0 = 0, y_1^s, \epsilon_1)$$

This implies that for any marriage to occur in childhood, the dowry needs to offset a woman's costs to her in-laws' budget ($\tau_1 \leq w_1^f$). Defining the option value of marriage for a woman's family as

$$\Omega^f = \delta\left\{\mathbb{E}\left[V_2^f(M_1 = 0)\right] - \mathbb{E}\left[V_2^f(M_1 = 1)\right]\right\}$$

and the option value of marriage for a man's family as

$$\Omega^m = \delta\left\{\mathbb{E}\left[V_2^m(M_1 = 0)\right] - \mathbb{E}\left[V_2^m(M_1 = 1)\right]\right\}$$

A man's family would want him to marry in the first period if and only if

$$H(y_1^m, \epsilon_{1i}, \tau_1) \equiv u\left(y_1^m + \epsilon_{1i} + w_1^m - (\tau_1 - w_1^f)\right) - u\left(y_1^m + \epsilon_{1i} + w_1^m\right) - \Omega^m > 0$$

Similarly, a woman's family would want her to marry in the first period if and only if

$$W(y_1^f, \epsilon_{1i}, \tau_1) \equiv u\left(y_1^f + \epsilon_{1i} + w_1^f + (\tau_1 - w_1^f)\right) - u\left(y_1^f + \epsilon_{1i} + w_1^f\right) - \Omega^f > 0$$

Hence, the thresholds of idiosyncratic temporary income ϵ_f^* and ϵ_m^* are defined implicitly as $W(y_1^f, \varepsilon_f^*, \tau_1) \equiv 0$ and $H(y_1^m, \varepsilon_m^*, \tau_1) \equiv 0$ respectively. Therefore, there exist two thresholds of idiosyncratic temporary income, $\varepsilon_f^*(\tau_1, y_1^f)$ and $\varepsilon_m^*(\tau_1, y_1^m)$, which determine the marriage decision in the first period. With dowry, all women with $\varepsilon_{1i} \geq \varepsilon_f^*(\tau_1, y_1^f)$ and all men with $\varepsilon_{1j} \leq \varepsilon_m^*(\tau_1, y_1^m)$ will choose to marry in the first period.

Under dowry, the supply and demand for brides are equal to

$$S(\tau_1, y_1^f) = 1 - F(\epsilon_f^*(\tau_1, y_1^f))$$

$$D(\tau_1, y_1^m) = F(\epsilon_m^*(\tau_1, y_1^m))$$

By the implicit function theorem (IFT), the chain rule, and the fact $f(\cdot) > 0$ (continuity), we have that

$$\frac{\partial S(\tau_1, y_1^f)}{\partial y_1^f} = S_y(\tau_1, y_1^f) = -f(\epsilon_f^*)\frac{\partial \epsilon_f^*}{\partial y_1^f} = f(\epsilon_f^*)\frac{\partial W/\partial y_1^f}{\partial W/\partial \epsilon_f^*},$$
$$\frac{\partial D(\tau_1, y_1^m)}{\partial y_1^m} = D_y(\tau_1, y_1^m) = f(\epsilon_m^*)\frac{\partial \epsilon_m^*}{\partial y_1^m} = -f(\epsilon_m^*)\frac{\partial H/\partial y_1^m}{\partial H/\partial \epsilon_m^*}.$$

Given the expressions for $W()$ and $H()$, under dowry (with $\tau_1 \leq w_1^f$) we have that

$$\frac{\partial S(\tau_1, y_1^f)}{\partial y_1^f} = S_y(\tau_1, y_1^f) = f(\epsilon_f^*) > 0$$
$$\frac{\partial D(\tau_1, y_1^m)}{\partial y_1^m} = D_y(\tau_1, y_1^m) = -f(\epsilon_m^*) < 0$$

Therefore, when dowry prevails, the supply of brides $S(\tau_1, y_1^f)$ is increasing in the bride's households' income y_1^f and the demand for brides $D(\tau_1, y_1^m)$ is decreasing in the groom's households' income y_1^m.

The equilibrium quantity of early marriage is given by

$$Q_1^* \equiv D(y_1^m, \tau_1^*) = S(y_1^f, \tau_1^*).$$

Hence,

$$\frac{\partial Q_1^*}{\partial y_1^f} = S_{y^f}(y_1^f, \tau_1^*) + S_\tau(y_1^f, \tau_1^*)\frac{\partial \tau_1^*}{\partial y_1^f},$$
$$\frac{\partial Q_1^*}{\partial y_1^m} = D_{y^m}(y_1^m, \tau_1^*) + D_\tau(y_1^m, \tau_1^*)\frac{\partial \tau_1^*}{\partial y_1^m}.$$

Equilibrium prices are therefore defined implicitly as the solution to $S(y_1^f, \tau_1^*) - D(y_1^m, \tau_1^*) = 0$.

This implies that, by the IFT,

$$\frac{\partial \tau_1^*}{\partial y_1^f} = -\frac{S_{y^f}}{S_\tau - D_\tau},$$

$$\frac{\partial \tau_1^*}{\partial y_1^m} = \frac{D_{y^m}}{S_\tau - D_\tau}.$$

and that

$$\frac{\partial Q_1^*}{\partial y_1^f} = S_{y^f} - S_\tau\left[\frac{S_{y^f}}{S_\tau - D_\tau}\right] = \frac{-S_{y^f}D_\tau}{S_\tau - D_\tau},$$
$$\frac{\partial Q_1^*}{\partial y_1^m} = D_{y^m} + D_\tau\left[\frac{D_{y^m}}{S_\tau - D_\tau}\right] = \frac{D_{y^m}S_\tau}{S_\tau - D_\tau}.$$

After applying the above derivations on the signs of the partial derivatives of supply and demand as shown earlier, if follows that

$$\operatorname{sgn}\left(\frac{\partial Q_1^*}{\partial y_1^f}\right) = \operatorname{sgn}(S_{y^f}) > 0$$
$$\operatorname{sgn}\left(\frac{\partial Q_1^*}{\partial y_1^m}\right) = \operatorname{sgn}(D_{y^m}) < 0$$

Hence, when dowry prevails, lower income for the bride's family decreases early marriage in equilibrium ($dQ_1^*/dy_1^f > 0$) holding all else constant, while lower income for the groom's family increases early male marriage in equilibrium ($dQ_1^*/dy_1^m < 0$). The total differential can be expressed as

$$dQ_1^* = \frac{\partial Q_1^*}{\partial y_1^f}\,dy_1^f + \frac{\partial Q_1^*}{\partial y_1^m}\,dy_1^m = -\frac{S_{y^f}D_\tau}{S_\tau - D_\tau}\,dy_1^f + \frac{D_{y^m}S_\tau}{S_\tau - D_\tau}\,dy_1^m.$$

If there is an aggregate income shock common to both sides of the marriage market ($dy_1^f = dy_1^m = dy_1$)

$$\frac{dQ_1^*}{dy_1} = \frac{D_y S_\tau - S_y D_\tau}{S_\tau - D_\tau}$$

which simplifies to

$$\frac{dQ_1^*}{dy_1} = S_y - \frac{S_\tau (S_y - D_y)}{S_\tau - D_\tau}.$$

which is the exact result from Corno et al. (2020), the sign of which remains ambiguous purely from the model's primitives and is positive under certain assumptions.

In contrast, if there is an asymmetric income shock to the groom's side ($dy_1^m < 0$) while there is no such reduction to income on the bride's side ($dy_1^f = 0$)

$$dQ_1^* = \frac{D_{y^m} S_\tau}{S_\tau - D_\tau}\, dy_1^m$$

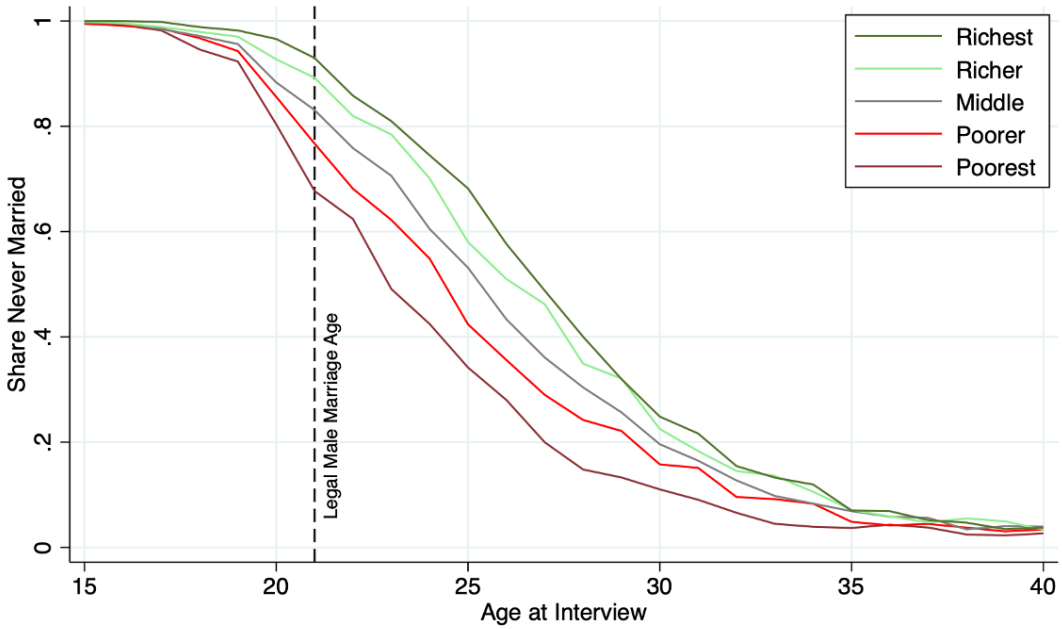
Therefore, conditional on there being no income shock on the brides side of the marriage market ($dy_1^f = 0$), early marriage increases ($dQ_1^* > 0$) if the grooms' side of the market is exposed to a negative income shock ($dy_1^m < 0$). Early marriage decreases ($dQ_1^* < 0$) if the brides' side of marriage market is exposed to a negative income shock ($dy_1^m > 0$) provided there is no income shock on the grooms' side of the market ($dy_1^m = 0$). In this way, unlike the joint-shock case which collapses into the model's original result, the direction of which can only by ascertained under certain assumptions, an asymmetric shock has an unambiguous sign: a negative income shock to the groom's side, in the absence of a change to income on the bride's side, causes earlier marriage.

This model does not currently allow for adjustment along several important dimensions like migration distance and markers of perceived relative spouse quality (such as age, education, and caste identification) that could plausibly shape the estimated effects; analysis incorporating these dimensions is ongoing.

4 Data

To capture marriage timing, I use individual-level data from the 2015–16 and 2019–21 waves of India's National Family Health Survey (NFHS), a nationally representative household survey. I use the men's questionnaire, which collects retrospective information on age at first marriage alongside standard demographic characteristics, and pool respondents across both waves, giving a usable sample of 193,825 men born between 1960 and 2005.

Figure 2: Share of Boys and Men Never Married by Age and Wealth Quintile



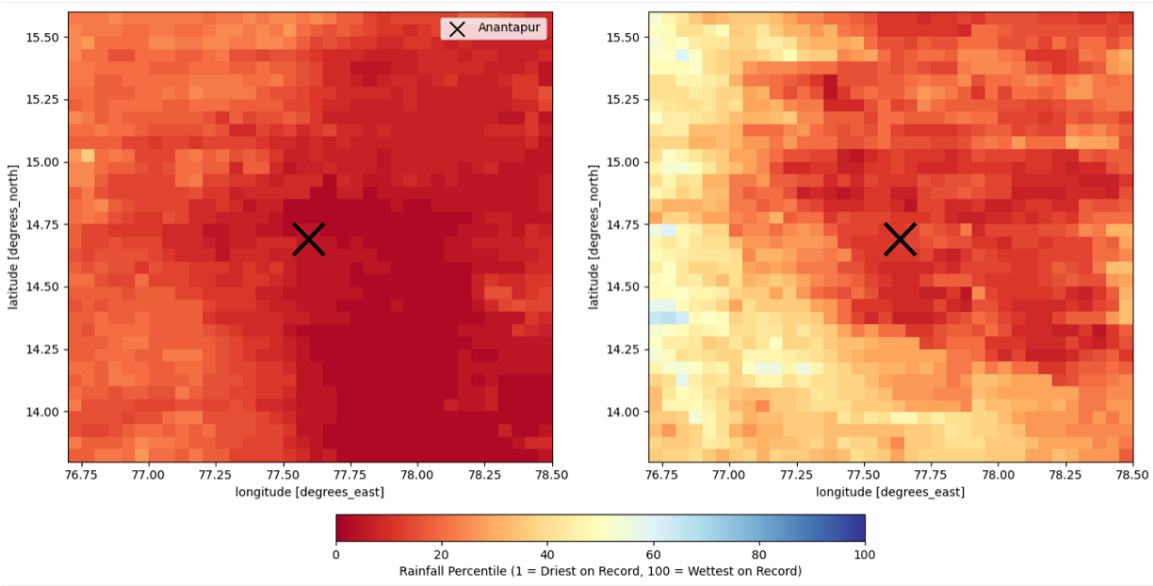
Source: India NFHS 2016 and 2021

Descriptive statistics are shown in Appendix Table 2. The share of boys and men in the sample who have never married by age at interview and wealth quintile is shown in Figure 2.

I capture exogenous local income shocks using rainfall data from the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), which provides daily precipitation estimates at a spatial resolution of $0.05^\circ \times 0.05^\circ$ (approximately 5km x 5km, with east–west distances varying by latitude) from 1981 to the near-present, constructed using a combination of satellite imagery, in-situ station data, and interpolation. I aggregate daily rainfall to the cell-year level. Using the GPS coordinates of each NFHS survey cluster, I match each respondent to the CHIRPS grid cell containing his cluster location.

I define a grid cell-year as experiencing drought if total annual rainfall falls below the 10th percentile of the grid cell's own long-run rainfall distribution, calculated over 1981–2021, adapting the approach of Corno et al. (2020) and Burke et al. (2015). For each respondent, I construct two drought measures: local drought, an indicator equal to one if the respondent's own grid cell experienced drought in a given year and zero otherwise, and surrounding drought proportion, the share of grid cells within a 30km radius of the respondent's grid cell that also experienced drought in that year. While the main specification uses a 30km radius based on the only available estimate of the mean marriage migration distance from Rosenzweig and Stark (1989), Table 5 shows robustness across a range of radius lengths.

Figure 3: Illustration of drought with different surrounding drought proportions



Source: CHIRPS

5 Empirical Strategy

My identification strategy exploits the fact that, under patrilocality, prospective brides and grooms typically reside in different locations prior to marriage. As such, a groom's household may be exposed to local income shocks distinct from the shocks experienced by the pool of potential brides drawn from surrounding areas. Because men rarely migrate for marriage, a married respondent's residential location at the time of survey typically corresponds to his household's location prior to marriage, making historical rainfall in his own grid cell a valid source of exogenous household income variation from his childhood onwards. Together, local drought exposure and the proportion of the surrounding area experiencing drought allow me to separately identify the effect of a shock localized to a given groom's own community from that of a shock shared with the surrounding area from which his prospective bride is likely to be drawn.

I estimate a discrete-time hazard model of first marriage, following the specification in Corno et al. (2020). The data is converted into a person-age panel format. In the main results, the observation window is set to include ages 15-40, the window during which nearly all men in the sample get married. Each man contributes one observation for each year of age from 15 until he is married, after which he exits the data. The data structure underlying this approach is illustrated in Appendix Table 1. For man i[1] , residing in grid cell g and district d, born in cohort k, the hazard of marrying at age t is given by

$$\begin{aligned}\text{Married}_{i,g,d,k,t} = \beta_1 \text{LocalDrought}_{g,k,t-1} + \beta_2 \text{SurroundingDroughtProp}_{g,k,t-1} \\ + \beta_3 \left(\text{LocalDrought}_{g,k,t-1} \times \text{SurroundingDroughtProp}_{g,k,t-1}\right) \\ + \alpha_t + \omega_g + \tau_d + \gamma_k + \sigma_{s,k} + \theta X_i + \varepsilon_{i,g,d,k,t}. \qquad (1)\end{aligned}$$

where $\text{Married}_{i,g,d,k,t}$ is an indicator equal to one if man i marries at age t and is equal to zero for ages before marriage occurs. $\text{LocalDrought}_{g,k,t-1}$ is an indicator equal to one if grid cell g experiences drought in the year before man i turns age t. $\text{SurroundingDroughtProp}_{g,k,t-1}$ is the proportion of grid cells within a 30km radius of g that experience drought in that same year. α_t are age fixed effects, ω_g are grid cell fixed effects, τ_d are district fixed effects, γ_k are cohort fixed effects, and $\sigma_{s,k}$ are state-by-year-of-birth fixed effects, where s indexes the state in which district d is located. θX_i represents individual-level controls for religion and caste.

The coefficient β_1 captures the effect of a local drought shock on the hazard into marriage, holding surrounding conditions fixed. The coefficient β_2 captures the effect of the proportion of grid cells in the surrounding area which are experiencing drought on hazard into marriage, holding local conditions fixed. The coefficient β_3 captures how the effect of a local drought is moderated when the surrounding area is simultaneously affected: the model predicts $\beta_3 < 0$, since a shock shared by both sides of the market is predicted to offset the acceleration in male marriage timing arising from a groom-side-only shock. I

[1]Here, 'man' refers to boys and men from age 15 to 40.

test this prediction directly using a linear combination test of $\beta_1 + \beta_2 + \beta_3$, evaluated at $SurroundingDrought = 1$, to assess whether the local drought effect is fully offset when all surrounding areas within the radius are also exposed to drought.

6 Results

Table 1 presents estimates of Equation (1). Column (1) reports the effect of local drought alone, without interacting it with the surrounding drought exposure. The coefficient is small, positive, and statistically indistinguishable from zero. Once the interaction with the proportion of the surrounding area in drought is introduced in column (2), the coefficient on local drought emerges as substantially larger and statistically significant at the 1% level: a local drought increases the annual hazard of first marriage by 0.66 percentage points, against a mean annual hazard of 6.84%. The coefficient on local drought remains stable in magnitude and significance as district fixed effects are added (column 3). In the preferred specification in column (4) which adds state-by-cohort fixed effects, local drought exposure increases the annual hazard of marriage by 0.67 percentage points, corresponding to a 9.8% increase relative to the sample mean.

Table 1: Effect of drought on male marriage timing

Married × 100	(1)	(2)	(3)	(4)
Local Drought (β_1)	0.054	0.659***	0.661***	0.668***
	(0.062)	(0.195)	(0.195)	(0.196)
Surrounding Drought Prop. (β_2)		-0.124	-0.124	-0.212
		(0.208)	(0.208)	(0.209)
Local Drought × Surrounding Drought Prop. (β_3)		-0.646**	-0.648**	-0.617*
		(0.318)	(0.318)	(0.320)
Linear Combination $\beta_1 + \beta_2 + \beta_3$		-0.111	-0.111	-0.162**
		(0.079)	(0.079)	(0.081)
District FE	No	No	Yes	Yes
State × Year of Birth FE	No	No	No	Yes
Mean of Dependent Variable	6.84	6.84	6.84	6.84
Number of Boys / Men	193,828	193,828	193,828	193,825
Number of Observations	1,745,057	1,745,057	1,745,057	1,745,054
Adjusted R^2	0.06	0.06	0.06	0.06

Notes: All regressions include fixed effects for grid cell, year of birth, and age, and control variables for caste and religion. Men are observed from ages 15 to 40. Robust standard errors clustered at the grid cell level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The coefficients on the interaction term (β_3) are individually negative in all specifications, consistent with the model's prediction that the acceleration effect of a local shock is moderated as drought becomes more widespread across the surrounding bride-supplying area. The linear combination $\beta_1 + \beta_2 + \beta_3$, the total effect of a shock affecting the groom's own community and the entirety of the surrounding radius simultaneously, is small and negative across all four columns, becoming statistically significant in column (4). This is consistent with the model's prediction that a shock shared across both sides of the market has an ambiguous, rather than unambiguously positive, effect on male marriage timing: the acceleration generated by a local shock to the groom's household is offset as the surrounding area, from which brides are typically drawn, are similarly affected.

Table 2 re-estimates the preferred specification separately by age group. The effect of local drought is particularly strong among boys and men aged below the legal marriage age of 21 in India as shown in column (2). Here, the coefficient on Local Drought (β_1) is positive and significant, reflecting a 17.8% increase relative to the sample mean. I split the adult marriage ages 21-40 into two observation windows 21-26 in column (3) and 27-40 in column (4) based on a median marriage age among those who did not experience boy child marriage of 25.5 years. The effect of drought on male marriage is positive and strongly significant among the 21–25 age group with an effect size of 1.36 percentage points corresponding to a 12.5% increase relative to the mean. Among men aged 27–40, the coefficient on local drought is statistically insignificant. The linear combination of coefficients is negative across age groups, and statistically distinguishable from zero in the 21-26 age range, indicating that the offsetting pattern documented in Table 1 holds across the age distribution.

Figure 4 plots β_1 estimated on the samples which are split by characteristics: rural/urban residence, religion, and caste. The point estimates of the effect of local drought on male marriage timing is larger and statistically significant among rural households, Hindu households, and households belonging to lower castes, scheduled castes or scheduled tribes, relative to the estimate from the rest of the sample which, in each case, is statistically insignificant at the 5% level. While the confidence intervals overlap across each pair of split samples, these differential responses are broadly consistent with expected heterogeneous effects emanating from existing research (Corno and Voena, 2023; Corno et al., 2020).

Table 2: Effect of drought on male marriage timing by age

Married × 100	(1) All Ages 15–40	(2) Child Marriage Ages 15–20	(3) Adult Marriage Ages 21–26	(4) Adult Marriage Ages 27–40
Local Drought (β_1)	0.668***	0.487***	1.356***	0.484
	(0.196)	(0.172)	(0.440)	(0.853)
Surrounding Drought Prop. (β_2)	-0.212	-0.061	-0.224	-0.117
	(0.209)	(0.180)	(0.473)	(0.917)
Local Drought × Surrounding Drought Prop. (β_3)	-0.617*	-0.462*	-1.445**	-0.567
	(0.320)	(0.278)	(0.715)	(1.386)
Linear Combination $\beta_1 + \beta_2 + \beta_3$	-0.162**	-0.036	-0.313*	-0.200
	(0.081)	(0.073)	(0.185)	(0.349)
Mean of Dependent Variable	6.84	2.73	10.84	15.43
Number of Boys / Men	193,825	192,292	128,825	45,372
Number of Observations	1,745,054	985,763	548,663	209,818
Adjusted R^2	0.06	0.04	0.04	0.04

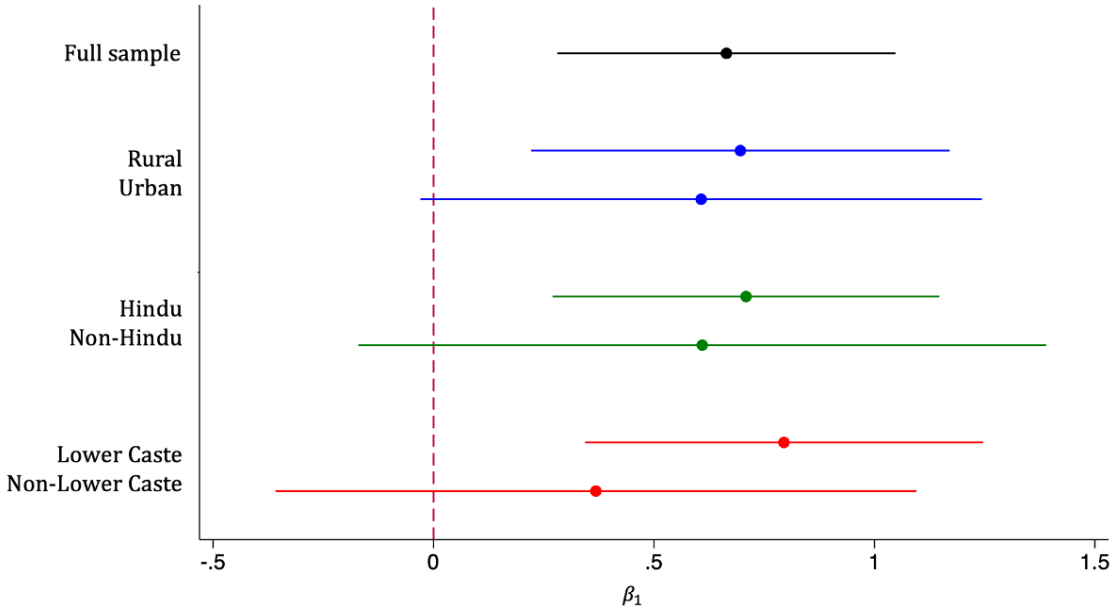
Notes: All regressions include fixed effects for grid cell, district, year of birth, state × year of birth, and age, and control variables for caste and religion. Robust standard errors are clustered at the grid cell level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Heterogeneous Effects of Drought on Male Marriage Timing

Married × 100	(1)	(2)	(3)	(4)	(5)	(6)
	Residence		Religion		Caste	
	Rural	Urban	Hindu	Non-Hindu	Lower Caste	Non-Lower Caste
Local Drought (β_1)	0.696***	0.607*	0.709***	0.610	0.795***	0.368
	(0.242)	(0.325)	(0.224)	(0.398)	(0.230)	(0.371)
Surrounding Drought Prop. (β_2)	-0.187	-0.231	-0.057	-0.720*	-0.128	-0.262
	(0.262)	(0.338)	(0.242)	(0.421)	(0.240)	(0.412)
Local Drought × Surrounding Drought Prop. (β_3)	-0.639	-0.599	-0.804**	-0.079	-0.852**	-0.199
	(0.396)	(0.527)	(0.366)	(0.642)	(0.370)	(0.612)
Linear Combination $\beta_1 + \beta_2 + \beta_3$	-0.130	-0.223*	-0.152*	-0.189	-0.185**	-0.093
	(0.100)	(0.132)	(0.091)	(0.171)	(0.094)	(0.161)
Mean of Dependent Variable	7.22	6.01	7.02	6.26	7.04	6.17
Number of Boys / Men	137,718	56,097	150,282	43,507	153,838	39,936
Number of Observations	1,199,977	545,067	1,335,905	409,113	1,354,955	390,048
Adjusted R^2	0.059	0.061	0.061	0.055	0.059	0.065

Notes: All regressions include fixed effects for grid cell, district, year of birth, age, and state × year of birth, and control variables for caste and religion (omitted within the relevant split sample). Robust standard errors (in parentheses) are clustered at the grid cell level.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 4: Differential effects of drought on male marriage timing by household characteristics



Notes: 'Lower-Caste' includes all respondents, regardless of religion, who report to belong to a lower caste, scheduled caste or scheduled tribe. 'Non-Lower Caste' includes the rest of the full sample.

7 Robustness Checks

7.1 Robustness against restricting to permanent residents

In Table 4, I restrict the sample to men who report that they have 'always' lived in their current residence. This is to ensure that the assignment of historical rainfall realizations is correct, since coordinates of previous residences among men who have moved are not recorded in the data.

7.2 Robustness to varying the definition of drought

Figure 5 plots the point estimates and 95% intervals as bars for a set of specifications which vary the percentile cutoff to define drought from 1 to 45. These results show that the direction and significance of β_1 is robust to varying the percentile threshold used to define drought and that the point estimates are stable around the chosen 10th percentile cutoff.

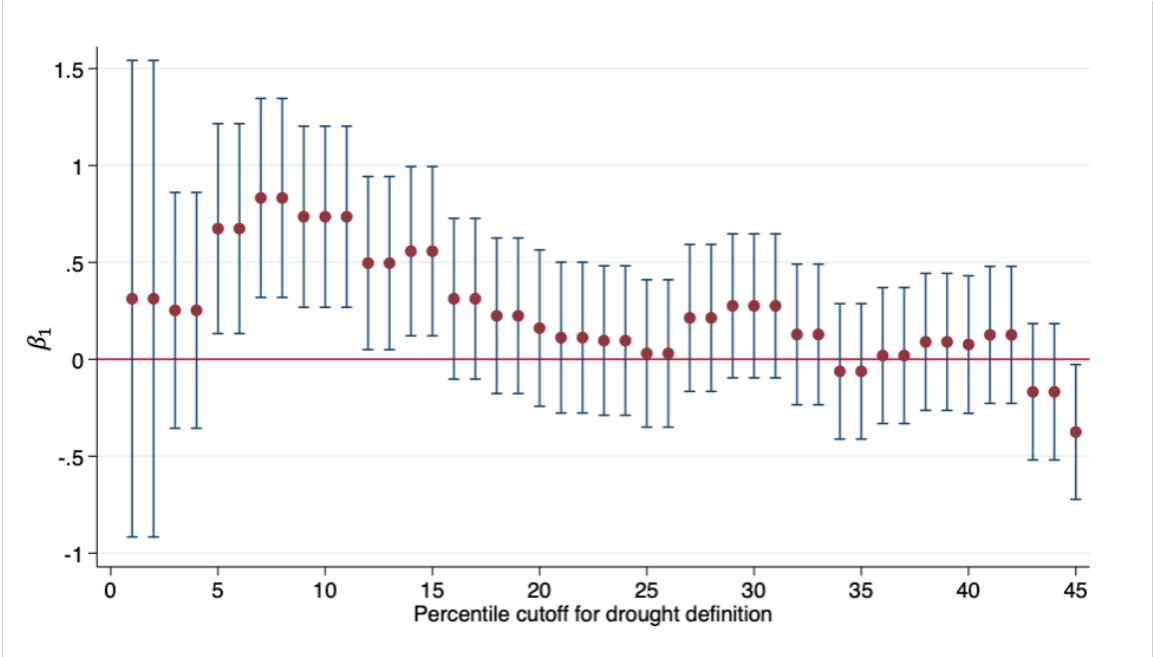
Table 4: Robustness against restricting sample to permenant residents

Married × 100	(1)	(2)	(3)	(4)
Age range (years):	15–40		15–20	
Local Drought (β_1)	0.693***	0.668***	0.481**	0.487***
	(0.236)	(0.196)	(0.213)	(0.172)
Surrounding Drought Prop. (β_2)	-0.272	-0.212	-0.066	-0.061
	(0.255)	(0.209)	(0.218)	(0.180)
Local Drought × Surrounding Drought Prop. (β_3)	-0.561	-0.617*	-0.502	-0.462*
	(0.383)	(0.320)	(0.339)	(0.278)
Linear Combination $\beta_1 + \beta_2 + \beta_3$	-0.140	-0.162**	-0.086	-0.036
	(0.097)	(0.081)	(0.088)	(0.073)
Sample restricted to men who have never moved?	Yes	No	Yes	No
Mean of Dependent Variable	6.87	6.84	2.87	2.73
Number of Boys / Men	135,795	193,825	134,916	192,292
Number of Observations	1,190,062	1,745,054	687,735	985,763
Adjusted R^2	0.06	0.06	0.04	0.04

Notes: All regressions include fixed effects for grid cell, district, year of birth, state × year of birth, and age, and control variables for caste and religion. Columns (1) and (3) restrict the sample to men who report having always lived at their current residence. Columns (2) and (4) show the results from the default full sample which includes all men. Standard errors (in parentheses) are clustered at the grid cell level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 5: Robustness in the definition of drought based on cutoffs in rainfall distribution.



7.3 Robustness to varying the radius length of surrounding area

To check that the findings are not sensitive to the choice of the surrounding-area radius length used to construct the variable SurroundingDroughtProp, Table 5 re-estimates the preferred specification using a range of radii. β_1 remains positive across radius lengths and is statistically significant when the radius length is set to 15km or greater. The linear combination $\beta_1 + \beta_2 + \beta_3$ remains small and statistically indistinguishable from zero across all radii shown, consistent with the main results.

7.4 Robustness against alternative levels of spatial clustering

As a check on the sensitivity of the findings to the level at which standard errors are clustered, Table 6 re-estimates the preferred specification, reproduced here in column (1), with standard errors clustered at the district and state level in columns (2) and (3) respectively. Given the low number of states, I additionally compute wild bootstrapped p-values associated with the coefficients from OLS estimation, following (Cameron et al., 2008) and report these in column (4). The results remain stable under all alternative levels of spatial clustering.

Table 5: Effect of Drought on Male Marriage Timing, by Surrounding Area Radius

Married × 100	(1)	(2)	(3)	(4)	(5)	(6)
Radius length to define surrounding area:	10 km	15 km	20 km	25 km	30 km	35 km
Local Drought (β_1)	0.335	0.473*	0.594**	0.648***	0.668***	0.715***
	(0.267)	(0.261)	(0.250)	(0.243)	(0.196)	(0.230)
Surrounding Drought Prop. (β_2)	-0.333	-0.306	-0.337	-0.291	-0.212	-0.233
	(0.278)	(0.270)	(0.262)	(0.259)	(0.209)	(0.251)
Local Drought × Surrounding Drought Prop. (β_3)	-0.018	-0.218	-0.348	-0.473	-0.617*	-0.643*
	(0.408)	(0.405)	(0.395)	(0.389)	(0.320)	(0.378)
Linear Combination $\beta_1 + \beta_2 + \beta_3$	-0.015	-0.051	-0.091	-0.116	-0.162**	-0.160*
	(0.088)	(0.091)	(0.093)	(0.095)	(0.081)	(0.097)
Mean of Dependent Variable	6.84	6.84	6.84	6.84	6.84	6.84
Number of Boys / Men	193,828	193,828	193,828	193,828	193,828	193,828
Number of Observations	1,745,054	1,745,054	1,745,054	1,745,054	1,745,054	1,745,054
Adjusted R^2	0.06	0.06	0.06	0.06	0.06	0.06

Notes: All regressions include fixed effects for grid cell, district, year of birth, state × year of birth, and age, and control variables for caste and religion. Men are observed from ages 15 to 40. Standard errors (in parentheses) are clustered at the grid cell level. Column (5), using a 30km radius, corresponds to the main specification reported in Table 1.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7.5 Placebo checks on lags and leads of drought

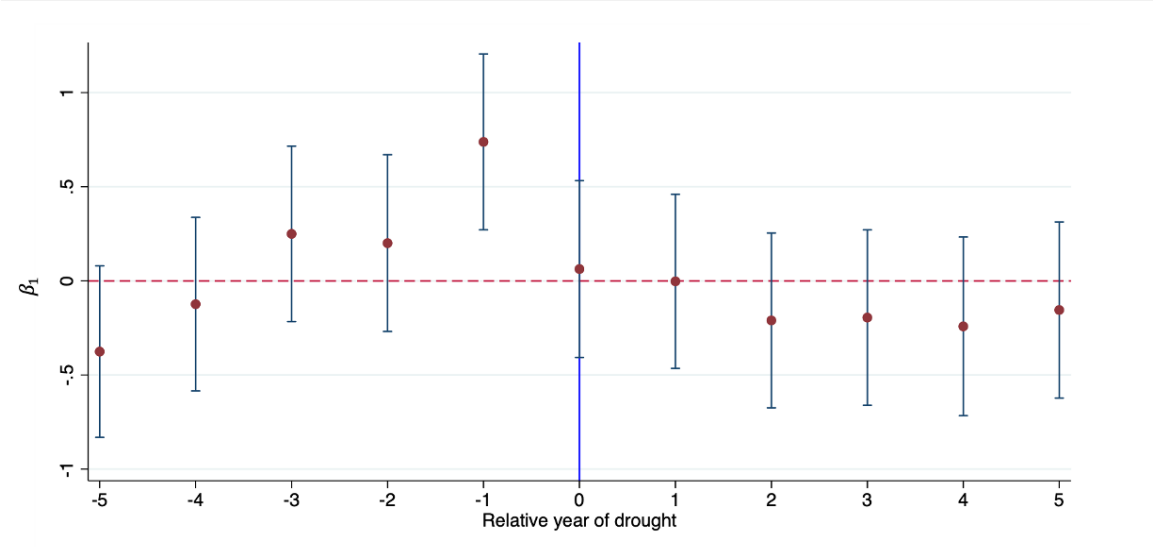
As a check on the validity of the identification strategy, I test whether the effect of local drought is concentrated at the hypothesized one-year lag. I re-estimate Equation (1) ten times, and in each additional specification I replace the Local Drought indicator, Widespread Drought indicator and their interaction with a different time lag or lead, ranging from a lag of five years to a lead of five years. Figure 6 plots the resulting coefficients and 95% confidence intervals as bars. The estimated effect is significant only at the one-year lag used in the main specification, consistent with the timing assumption embedded in the empirical approach.

Table 6: Effect of Drought on Male Marriage Timing, Alternative Clustering Levels

Married × 100 Standard Error Clustering Level:	(1) Grid Cell	(2) District	(3) State	(4) State (Bootstrap)
Local Drought (β_1)	0.659***	0.659***	0.659***	0.664***
	(0.195)	(0.200)	(0.166)	[p = 0.001]
Surrounding Drought Prop. (β_2)	-0.124	-0.124	-0.124	-0.210
	(0.208)	(0.212)	(0.227)	[p = 0.364]
Local Drought × Surrounding Drought Prop. (β_3)	-0.646**	-0.646**	-0.646*	-0.616
	(0.318)	(0.326)	(0.347)	[p = 0.130]
Number of Clusters	14,259	736	39	39
Mean of Dependent Variable	6.84	6.84	6.84	6.84
Number of Boys / Men	193,828	193,828	193,828	193,825
Number of Observations	1,745,057	1,745,057	1,745,057	1,745,054
Adjusted R^2	0.06	0.06	0.06	0.00

Notes: All regressions include fixed effects for grid cell, year of birth, and age, and control variables for caste and religion. Men are observed from ages 15 to 40. Columns (1)–(3) report robust standard errors clustered at the level indicated in each column heading in parenthesis. Column (4) reports wild cluster bootstrap p-values (Cameron, Gelbach and Miller 2008; 9,999 replications, Rademacher weights) in brackets.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 6: Placebo check of lags and leads of drought



8 Conclusion

This paper provides the first nationally representative evidence that negative income shocks accelerate marriage among boys and men in India, and shows that this response depends on economic conditions facing the brides' side of the marriage market. Extending the equilibrium model of Corno et al. (2020) to allow grooms' and brides' households to face distinct income realizations, I show that a groom-side negative shock is predicted to accelerate male marriage timing, but that a shock shared across both the grooms' and bride's side collapses back to the original result from Corno et al. (2020), which says that child marriage decreases in response to a negative income shock under certain additional conditions.

Exploiting patrilocal marriage customs in India, under which grooms and prospective brides typically reside in geographically distinct but proximate locations prior to marriage, I construct two measures of drought exposure, one local to the groom's own household, and one capturing conditions in the surrounding area from which his prospective bride is likely to be drawn, allowing me to separately identify these competing effects. A local drought increases the annual hazard of first marriage by 9.8% relative to the sample mean. The effect of local drought exposure on male child marriage is particularly strong, raising the annual hazard into marriage among boys aged 15-20 by 17.8%. The combined effect of a shock affecting both sides of the market simultaneously is statistically significant and negative, indicating that the spatial extent of a shock, not merely its severity, shapes its consequences for marriage timing.

These results suggest that policies aimed at delaying marriage should account carefully for both sides of the marriage market, their spatial interdependence, and the decisive role of cultural norms around kinship, like patrilocality, in shaping the transmission of economic shocks.

9 Appendix

Appendix Table 1: Hazard model data structure

ID	Grid cell	Year	Age	Year of birth	Year of marriage	Drought$_{t-1}$	Prop. of radius in drought$_{t-1}$	Married$_t$
1	28.60, 77.20	2005	15	1990	2010	0	0.10	0
1	28.60, 77.20	2006	16	1990	2010	0	0.05	0
1	28.60, 77.20	2007	17	1990	2010	0	0.00	0
1	28.60, 77.20	2008	18	1990	2010	0	0.11	0
1	28.60, 77.20	2009	19	1990	2010	0	0.00	0
1	28.60, 77.20	2010	20	1990	2010	1	0.65	1
1	28.60, 77.20	2011	21	1990	2010	0	0.15	.
1	28.60, 77.20	2012	22	1990	2010	0	0.21	.
1	28.60, 77.20	2013	23	1990	2010	0	0.00	.
1	28.60, 77.20	2014	24	1990	2010	0	0.25	.
1	28.60, 77.20	2015	25	1990	2010	0	0.30	.
1	28.60, 77.20	2016	26	1990	2010	0	0.00	.
1	28.60, 77.20	2017	27	1990	2010	1	0.95	.
1	28.60, 77.20	2018	28	1990	2010	0	0.04	.
1	28.60, 77.20	2019	29	1990	2010	0	0.06	.
1	28.60, 77.20	2020	30	1990	2010	0	0.12	.
1	28.60, 77.20	2021	31	1990	2010	0	0.18	.

Notes: This table illustrates the person-year panel structure underlying the discrete-time hazard model. The full sample observes men from ages 15 to 40.

Appendix Table 2: Descriptive statistics

	Obs.	Mean	Std. Dev.	Min	Max
Panel A: Individual and Household Characteristics					
Year of Birth	193,828	1984.663	11.004	1960	2005
Lower Caste	193,828	0.794	0.405	0	1
Hindu	193,828	0.775	0.417	0	1
Rural	193,828	0.711	0.454	0	1
Current Age	193,828	32.449	10.835	16	54
Years of Education	193,828	8.603	4.726	0	20
No Education	193,828	0.129	0.335	0	1
Ever Married	193,828	0.652	0.476	0	1
Panel B: Marriage Outcomes					
Age at Marriage	126,419	23.301	4.709	13	53
Spousal Age Gap	124,966	4.540	3.886	-79	46

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